



DEPARTMENT OF THE INTERIOR

FINAL
ENVIRONMENTAL IMPACT STATEMENT

PROPOSED 1982 OUTER CONTINENTAL SHELF OIL AND
GAS LEASE SALE OFFSHORE SOUTHERN CALIFORNIA

OCS SALE NO. 68

VOLUME 1 OF 2

Prepared by the
Bureau of Land Management

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DEPARTMENT OF THE INTERIOR

FINAL
ENVIRONMENTAL IMPACT STATEMENT

PROPOSED

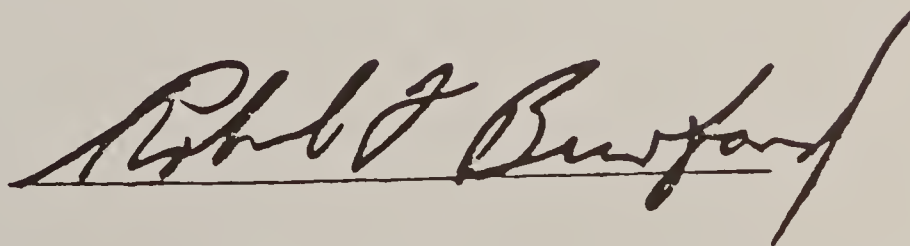
1982 OUTER CONTINENTAL SHELF OIL AND GAS
LEASE SALE OFFSHORE SOUTHERN CALIFORNIA

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Director
Bureau of Land Management

NOVEMBER 1981

FOREWORD

The EIS is designed to be read by a wide variety of organizations and individuals. A great deal of redundancy is, therefore, built into the document in the hope that both the cursory reader and the reader needing details on a specific subject will be able to find the information with a minimum of effort. The EIS is designed as follows:

The initial summary is a very brief summary of the major points and conclusions contained in Chapters I, II and IV.

Chapter I contains a detailed description of the proposal, administrative events leading up to the proposal, and mitigating actions that are useful in reducing potential impacts from the proposal.

Chapter II is a summary of the proposal, alternatives to the proposal, and potential impacts that could result from these alternatives.

Chapter III describes the area and resources that could be affected by Proposed Sale No. 68. No impacts are discussed in this chapter.

Chapter IV discusses in detail the potential impacts that could result from Proposed Sale No. 68 and alternatives to the proposal. Each area of concern such as air quality, commercial fisheries, marine mammals, and recreation is discussed separately. Cumulative impacts of the proposal and other activities also are discussed.

Chapter V is the references.

Chapter VI is a list of staff involved in preparation of the EIS.

Chapter VII discusses consultation conducted with other organizations and individuals during preparation of the proposal, consultation during preparation of the DEIS, comments received on the DEIS, and BLM's responses to these comments.

Chapter VIII contains appendices.

Chapter IX contains an index to the EIS.

SUMMARY

1. Preliminary Information

Proposed OCS Oil and Gas Lease Sale No. 68

Draft () Final (X) Environmental Impact Statement

Type of Action:

Administrative (X) Legislative ()

Lead Agency:

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Area of Project Impact:

Offshore and onshore areas, Southern California

2. Description of Area and Proposed Action

This Environmental Impact Statement (EIS) was prepared by the Bureau of Land Management's Pacific Outer Continental Shelf Office. It implements the Council on Environmental Quality's (CEQ) regulations regarding format and scope of an EIS.

Proposed OCS Sale No. 68 includes a maximum offering of 218 tracts, with a total area of about 450,415 hectares (1,112,975 acres). The tracts are offshore Southern California, between 3 and 84 geographic miles offshore and in water depths from about 46 to 1500 m (150 to 4,900 feet). Tracts comprise three subareas: the Santa Barbara Channel; Inner Banks (containing the Anacapa Island area, Santa Monica Basin and the San Pedro area); Outer Banks (containing the area south of Santa Rosa Island, San Nicolas Basin, Dall Bank, southeast Tanner Bank and Santa Tomas Knoll). There are existing Federal oil and gas leases in each of these three subareas. The area is depicted in the visuals in Volume II of the EIS.

Geological Survey estimates the economically recoverable oil and gas resources (conditional mean) for each of the subareas as follows: Santa Barbara Channel, 67 million bbl of oil, 133 billion cu. ft. of gas; Inner Banks and basins, 70 million bbl of oil, 93 billion cu. ft. of gas; and Outer Banks and basins, 93 million bbl of oil, 436 billion cu. ft. of gas.

3. Issues and Areas of Concern

Coordination with Other Agencies

As authorized by the OCS Lands Act, as amended, the Department of the Interior serves as the primary Federal agency administering leases on the Outer Continental Shelf. Department of the Interior agencies, particularly BLM and USGS, are in constant coordination with each other throughout the presale processes and the production phases, as well as coordinating as appropriate with other Federal, State, local, and non-governmental agencies and organizations.

Determination of Public Issues and Areas of Concern

The Council on Environmental Quality (CEQ) requires at 40 CFR 1501 "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." The scoping process for Proposed Sale No. 68 began in August, 1980. At that time, State and local governmental units, non-government organizations, and the general public were invited to a series of meetings in Newport Beach, San Pedro, Ventura, Santa Barbara, and Los Angeles. These meetings helped establish the particular issues and alternatives which would be analyzed in the EIS.

Major Environmental Issues and Areas of Concern

The scoping process and coordination with other Federal agencies identified the following environmental issues and areas as meriting special attention and emphasis in the environmental assessment process:

Geological Hazards	Military Use
Air Quality	Archaeological and Cultural
Water Quality	Resources
Marine Biological Resources	Visual Resources
Endangered Species	Adjunct to the Santa Barbara
Channel Islands National Marine	Channel Ecological Preserve
Sanctuary	(Buffer Zone)
Commercial Fishing	Oil Spills and Containment
Recreation and Sportfishing	Deep Water Ports
Socio-Economics	Conservation and Alternative
Land Use	Energy
Transportation Systems	Cumulative Impacts

4. Major Alternatives and Environmental Impacts

Seven alternatives are presented. The total Sale offering is Alternative 1.

Alternative 1 - Hold the Sale as Proposed: The potential impacts of holding the Sale as proposed are briefly summarized below.

i. Physical Environment: Impacts in this category are essentially restricted to those affecting water and air quality.

-Water quality will be degraded to a maximum distance of about 2500 m from oil platforms and drilling rigs. The long-term effects of discharges from these structures are not known. The short-term effects of drilling fluids, formation

water, small chronic leaks of hydrocarbons or the expected 1.1 spills of greater than 1,000 barrels of oil in the open ocean should be minimal for the entire lease sale area, given the dilution capability of open water. Should these occur in, or migrate into restricted bays or estuaries such as Upper Newport Bay, severe water quality degradation would result. The cumulative amounts of dumping of drill cuttings resulting from Proposed Sale No. 68 and previous sales will begin to be significant for nearshore areas already suffering impacts from municipal wastes; however, in general, the water quality impacts from petroleum hydrocarbons are expected to be of minor importance in the Southern California Bight in relation to the large volumes of municipal discharges of oil and grease. The exception is for offshore areas where OCS oil and gas activity may produce a significant portion of any impacts.

-Air quality onshore will be impacted due to increased emissions of hydrocarbons and nitrogen dioxide. Lesser quantities of sulfur dioxide, carbon monoxide, hydrogen sulfide and particulates will also be emitted. Proposed Sale No. 68-related activities will slightly increase pollutant loadings in those areas already exceeding the air quality standards. These incremental increases are below the levels considered significant by the DOI air quality regulations (30 CFR 250.57). For those pollutants and locations presently meeting air quality standards, the slight project-related contribution to pollutant concentrations is not expected to cause new exceedences of the standards. In nonattainment areas, Proposed Sale No. 68 activities could further deteriorate air quality.

ii. Biological Environment

-Plankton, the impacts of oil and gas activity from Proposed Lease Sale No. 68 on both phytoplankton and zooplankton should be insignificant.

-Intertidal impacts (to the benthos) from oil spills are predicted to be low to moderate in most cases. Rocky intertidal areas within the Southern California Bight are generally more sensitive than sandy intertidal areas. The oil spill model predicts a low probability of a spill reaching shore. One land segment within Ventura County has a 5 percent probability of a hit while Santa Catalina Island with a 13 percent probability and Santa Cruz Island with a 6 percent probability are the only segments having a greater than 5 percent probability of a hit within 30 days (for a spill of 1,000 bbl or greater).

Several sensitive rocky intertidal areas or species may experience a high ecological loss if a spill occurs. These areas/species are: 1) intertidal pools of the northwest coast of San Nicolas Island, 2) air breathing intertidal limpets of Santa Barbara Island, 3) algal (Pelvetia) beds and abalone herds of Santa Rosa Island's northern coast.

-Subtidal bottom communities would generally suffer a low ecological loss from either an oil spill or drilling operations. Generally, rocky bottoms are more impacted than soft sediment bottoms. Specific areas with benthic assemblages which could suffer a high ecological loss from oil operations are: 1) the rocky outcrops off Point Conception, which may contain unusual benthic assemblages, due to the unusual location of the area at the division point of two biogeographic provinces, 2) the Santa Rosa-Cortes Ridge because of its unusual species, and 3) the Tanner and Cortes Banks because of its highly productive community and coral population.

-Fish and fisheries. Fish: A large oil spill may cause low to moderate ecological losses to surface fishes (e.g., Pacific bonito, jack mackerel, northern anchovy, California grunion). The impacts of manmade structures and drilling muds on fish populations are unknown.

Commercial fisheries: A large oil spill may cause temporary economic losses to the commercial fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. Mud mounds and trenches from the anchors of pipelaying barges could create a high impact to trawlers in the Santa Barbara Channel. Vessel traffic, particularly seismic boats, may temporarily cause moderate impacts to the commercial fishing industry.

Sport fisheries: A large oil spill may cause temporary economic losses to the sport fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. In adverse weather, surface structures may be a minor hazard to navigation in the Santa Barbara Channel and Inner Banks.

-Marine mammals and seabirds that frequent the waters of the Southern California Bight are, to some extent, vulnerable to impacts associated with offshore oil and gas development activities. The nature and extent of these impacts vary from species to species, season to season, and area to area within the Bight. For the SCB (Southern California Bight) fur seal population, oil contamination of the fur can result in hypothermia, loss of buoyancy, and death. All pinniped rookeries within the SCB are sensitive to disturbance from human intrusion; nursing pups may also be exceptionally vulnerable to the ingestion of oil. Whale species which use large sections of the Bight in their bi-annual migration, along with resident pilot whale, porpoise, and dolphin species, may be adversely affected by oil contact, noise from exploratory and development activities, and the indirect effects of resource development on the OCS environment. Seabirds of the SCB, whether nesting (resident) or migratory, may be adversely affected by oiling of plumage or the disturbance of breeding colonies and/or nesting sites. It must also be noted that projected number of oil spills resulting from Proposed Sale No. 68 activity is very low.

Marine mammals: Low ecological losses are anticipated for elephant seals, harbor seals, Guadalupe fur seals, California sea lions and Stellar sea lions. Note, however, that moderate ecological losses could be sustained by elephant and harbor seals if their nursery areas were oiled. The probability of this happening is low. Northern fur seals are expected to sustain moderate to low ecological losses but could suffer high ecological losses. The probability of this happening is low. None of the cetaceans in the SCB are expected to incur more than a low ecological loss. The long-term effects of other contaminants such as drilling muds and cuttings and formation water upon marine mammals are not known. However, in comparison to the types, quantities, and toxicity of other pollutants entering the environment, and their apparent effect on the SCB fauna, Proposed Sale No. 68 contribution to this problem is probably insignificant.

Seabirds: No significant changes in the seabird populations of the SCB are anticipated. In the event that a spill occurs and strikes either these species

or their habitats, the seabirds are generally expected to sustain minor impacts. Seabirds, both those which nest in and migrate through the proposed Sale area, could be expected to suffer low ecological losses. Nesting occurs between January and August, while migrating species pass through the Bight in the spring and fall. Therefore, if a spill occurred, seabirds will be deleteriously impacted, regardless of the season. Birds whose habitats and foraging areas are primarily terrestrial should experience no impacts from Proposed Sale No. 68 caused activities (see Table IV.C.6-1).

-Endangered species whose habitats and foraging areas are strictly terrestrial should experience no impacts from Proposed Sale No. 68 activities. Species inhabiting or utilizing coastal and offshore areas of the Bight will be affected depending upon the nature and extent of an oil spill. Ecological losses could range from low to high. However, no potential impacts from Proposed Sale No. 68 are expected to threaten the existence of a species or produce unacceptable destruction of its habitat. See Section IV.C.6.b.ii for discussion of effects of non-oil contaminants.

-Estuaries are potentially one of the biological resources most sensitive to oil spills. If a large oil spill were to enter an estuary, a high ecological loss would result. However, most estuaries in Southern California have narrow openings, making it relatively easy to prevent oil from entering. Also, the probabilities of a hit, predicted by the oil spill model, are very low. It is apparent, therefore, that the Southern California estuaries are not likely to be impacted.

-Marine sanctuaries. Low to moderate ecological losses are expected to occur in the Channel Islands National Marine Sanctuary, but there is a potential for high ecological losses.

-Terrestrial biological resources are expected to receive low ecological impacts.

iii. Socio-Economic Environment

-Demography. Changes associated with Proposed Sale No. 68 economic activity are closely related to the number of new jobs. Population increases for the Southern California region are also expected to peak in 1992. The distribution among the Sale area counties for the peak year is: Santa Barbara 2,027; Ventura 1,651; Los Angeles 4,270; Orange 1,086; and San Diego 417.

-Coastal economy. The development associated with the proposal would stimulate investment and would generate jobs in the Southern California region. The direct employment in offshore oil and gas activities would peak in 1986 at approximately 400 jobs. According to the results of the Curtis Harris Economic Model, this would generate indirect and induced employment in many other sectors of the economy. The total effect on employment, at its peak in 1992, would be an estimated 4,526 jobs. The majority of the jobs would be located in Los Angeles (2,089), Santa Barbara (843), and Ventura County (803).

-Public facilities and services. These services may be affected by increases in the population and oil spills. Additional public and private services and facilities such as schools, housing, health facilities, fire and police protection, and water supply, and sewage treatment facilities could be required. Electricity

supply could be disrupted in the event of a large oil spill. Localized stress could occur on sewage treatment facilities, especially in some of the coastal communities. However, the most significant regional impact could be on water supply systems. Proposed Sale No. 68 induced population growth could put additional stress on the ability to provide adequate water supplies.

-Land use impacts, from Proposed Sale No. 68, are expected to be minor. This is due to the present level of industrialization in the Sale area. At present there is an oil and gas infrastructure in the area, which should absorb any additional need for onshore facilities. Local land use plans, sewage and water moratoriums, and local zoning policies may be employed by the local communities in regulating and restricting the total development of their own areas.

-Recreation impacts will probably be localized and short term, with mild economic consequences over the total sale area. Due to the number of non-water oriented tourist facilities in the area, the total impact on the recreation industry is expected to be minor, even in the event of a pollution incident. At the local level, however, economic impacts could be severe.

-Refineries. There should be no impacts on refineries in the Los Angeles basin based on the following assumptions:

- (1) Refineries have the capabilities and would process all of the crude oil from Proposed Sale No. 68.
- (2) Crude from Proposed Sale No. 68 would back out an equal amount of either foreign or Alaskan crude oil.

However, significant impacts could occur if crude from the proposed sale is of such quality that it could not be refined locally. In this case, extensive modification to the refining process may be required.

If the oil companies decide to transport the Proposed Sale No. 68 crude by tankers to other refineries than those that are located in the Los Angeles basin, the expected number of oil spills will be slightly higher.

-Transportation systems. The proposal (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) could cause the following impacts: 1) some increased employment in the shipping industry and at the ports; 2) some increased use of limited space and port resources; 3) rerouting of ship traffic and delayed entry or departure of ships from ports, in the event of a major spill; 4) increased cost of exploration and development due to traffic lanes crossing proposed tracts; 5) slight increase in vessel accidents; 6) small increase in the number of pipeline failures, causing oil spills; 7) minor increases in traffic movements on highways, railroads, and at airports; and 8) insignificant impacts to offshore structures. The current USCG policy is to not permit temporary or permanent structures within vessel traffic lanes or precautionary areas. In the event that temporary and/or permanent structures are permitted within the TSS, impacts on ports and shipping would be high economic losses to the shipping and oil industries (due to possible increased numbers of accidents between vessels and/or between vessels and offshore structures), increased probability of a large oil spill, and loss of lives.

-Military. Several tracts are being evaluated that fall within the Pacific Missile Test Center, San Clemente Island Test Range and the Long Beach Combat Systems Evaluation Range. Further Department of Defense/Department of the Interior negotiations are in progress to achieve a mutually satisfactory resolution to the space-use conflicts.

-Cultural resources. This proposal could commit some areas of relatively shallow waters of the OCS to a permanently disturbed condition by placing large and relatively permanent sources of magnetic anomalies on the seafloor during the life of the proposed project. Because of the apparently wide distribution and the good probability of resources on a large portion of the OCS, and because of the amount of industrial activity expected as a result of this proposal, it is possible there will be some loss of historic and prehistoric cultural resource sites on the OCS.

-Visual resource impacts from OCS development cannot be quantified with exact certainty due to individualized perception. The impact could vary from minimal to substantial depending upon the degree of new development and its relative location in relation to other types of development.

Alternative 2 - Modify the Sale by Deleting Tracts in the Channel Islands National Marine Sanctuary: This alternative consists of deleting the 13 complete and 24 partial tracts located within the Sanctuary. No drilling would be allowed on any portion of any tract within the Sanctuary. These tracts total approximately 38,000 hectares (94,000 acres), which is about 8 percent of the total proposed offering.

The adoption of Alternative 2 would result in a significant though unquantifiable reduction in potential impacts to intertidal and subtidal benthic organisms, and could result in a slight reduction in potential impacts to marine mammals, seabirds, fish, fisheries, and recreational, visual, and cultural resources. Other resources which could have a reduction in potential impacts are socio-economic, transportation such as vessel accidents, pipeline failures and highway/railroad/airport traffic. For the other resource categories discussed in this document, potential impacts are not expected to be significantly different from those described for Alternative 1.

If Alternative 2 is adopted, there would also be less low level chronic long term pollution reaching the marine sanctuary and the shores of the islands within it. Impacts from this stress are not known, but over the next 25 years, some detrimental impacts could occur.

Alternative 3 - Modify the Sale by Deleting Tracts in the Adjunct to the Santa Barbara Channel Ecological Preserve: This alternative would eliminate three complete plus five partial tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. The area size and geologic nature of hydrocarbon entrapment in this area make it impossible to give resource estimates and development scenarios without disclosing proprietary information.

The adoption of Alternative 3 would result in slight reductions to potential impacts to intertidal communities, fish, commercial and sport fisheries, seabirds, harbor seals, Goleta Slough Estuary, Channel Islands National Marine Sanctuary, and visual resources. Other resources having a slight reduction in

potential impacts are socio-economics, transportation and archaeological resources.

For the other resource categories discussed in this document, potential impacts are not expected to be significantly different from those described for Alternative 1.

Alternative 4 - Modify the Sale by Deleting Tracts Adjacent to Santa Monica Bay: This alternative consists of deleting the 12 tracts adjacent to Santa Monica Bay. These tracts are about 6 percent of the total proposed offering. All tracts are in excess of 750 m and are categorized as deep water tracts.

The adoption of Alternative 4 would result in a moderate reduction in potential socio-economic impacts to recreational areas in Santa Monica Bay and on Santa Catalina Island since these areas will have an reduction in probable oil spill impacts. A slight reduction in potential impacts to water quality, intertidal and subtidal bottom organisms, marine mammals, seabirds, and fish and fisheries also would result. Visual resources would remain at present level with the potential impact being removed from the area.

For other resource categories discussed in the document, potential impacts are not expected to be significantly different from those described for Alternative 1.

Alternative 5 - Modify the Sale by Deleting Tract 165 in the Precautionary Area: Selection of this alternative would result in the deletion of Tract 165, which lies in the Los Angeles/Long Beach Precautionary Area, from the proposed sale. Current U.S. Coast Guard policy and the USCG proposed PAR recommendations do not permit exploratory drilling operations or permanent structures (e.g., oil/gas platforms) in Precautionary Areas.

This deletion option would remove less than 1 percent of the area under consideration for Proposed Sale No. 68.

If this alternative is adopted, the impacts will be the same as described under Alternative 1 except for the following: A slight reduction in potential impacts caused by routing conflicts within the USCG proposed reconfiguration of the Precautionary Area; Removal of 1 tract from Department of Defense concern.

Potential impacts to the other resource categories discussed in this EIS would be reduced slightly.

Alternative 6 - Cancel the Sale: This alternative would constitute the no action alternative. The activities associated with the proposal would not occur. All potential physical and biological impacts arising from the discharge of drilling muds, cuttings, formation water and sewage, and those resulting from population shifts or the placement of rigs, pipelines, and related structures would be eliminated.

Cancelling the Sale will eliminate all the impacts that are expected to result from the proposal, but not all impacts from oil and gas activity in the Southern California region, since exploration and development is continuing from the previous Sales. Although impacts related to oil spills from

the proposal would be eliminated, the continued importation of oil via tankers is expected to result in spills. Two additional Southern California Sales are included on the Proposed 5-Year Leasing Schedule. If Proposed Sale No. 68 were cancelled for any reason, any of the tracts included in it could possibly be renominated for a later sale.

Realization of economic or national security benefits resulting from the estimated oil and gas resources would be foregone unless tracts from this sale were incorporated into a future Sale. Cancelling the Sale would also eliminate all regional increases in economic activity expected to occur as a result of the proposal. The jobs and increases in gross regional product foregone represent a less than 1 percent change over baseline projections. However, possible stress on communities associated with the Sale-related population growth would not occur if the Sale were cancelled.

Alternative 7 - Delay the Sale: If the alternative of delaying the sale is chosen, tracts would be withheld from a sale offering for a period of time.

Postponement of the sale would result in delay in the exploration, development, and production of Proposed Sale No. 68 oil and gas resources. Any economic or national security benefits which could be attributed to the domestic production of hydrocarbons in these amounts would be postponed.

A delay of the sale may not change any of the impacts assumed to occur under Alternative 1; it would most likely postpone their occurrence. However, improvements may occur in technologies for oil spill prevention and recovery, deep water drilling, or exploration and production in hostile environments which may lessen the risk of some adverse impacts. Also, new information on oil and gas resources may become available from drilling on adjacent existing leases, and the economic feasibility of developing an area probably will improve. Delaying the sale also would allow more time to assess the cumulative impacts from previous leasing, exploration, and development in the area and to determine appropriate mitigation measures. Another reason for delay could be to obtain more environmental information from ongoing or future studies since enhanced knowledge of the environment and effects of OCS activities might enable better management and regulation of OCS operations. However, without a delay of sale, the studies information will, nevertheless, become available later in the leasing cycle and will be used in evaluating exploration strategies and in developing production plans.

Other Alternatives: The purpose of this subsection is to emphasize that the Secretary can choose any combination or partial combination of tracts discussed in the preceding alternatives. For example, the Secretary might choose to delay leasing tracts within the marine sanctuary, but offer the remainder as proposed. The alternatives previously discussed are not intended to represent all possible alternatives to the proposed action.

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CHAPTER I

I. PURPOSE AND NEED FOR ACTION AND DESCRIPTION OF PROPOSAL

A. Purpose and Need for Action

Proposed Sale No. 68, which is a 1982 sale of tracts on the Outer Continental Shelf (OCS) offshore Southern California, is specified on the Department of the Interior's 5-year Oil and Gas Leasing Schedule. The proposed Sale is part of the nation's overall effort to reduce dependency upon foreign sources of petroleum. Implementation of this proposal, assuming a commercial discovery is made, would contribute to the goals of ensuring uninterrupted energy supplies and reducing the balance of payments deficit resulting from petroleum imports.

The United States currently produces about 61 percent of the oil it consumes. While the future U.S. energy demand will be supplied by a different mix of fuels than consumed today, oil and gas will continue to supply a significant proportion of the nation's energy needs through the year 2000. Although projections differ under varying assumptions, it is clear that the United States will remain dependent upon imported energy throughout this century. This dependency exposes the country to threats and actual interruption of imported energy supplies, having both national economic and security implications. Other energy forms, including solar, geothermal, and nuclear fission, will not significantly reduce dependence upon foreign sources of energy before the end of this century. Therefore, the goal is to make OCS resources available to meet national energy needs.

The U.S. OCS constitutes the last major frontier for domestic petroleum and natural gas exploration. To a large extent, OCS areas around all U.S. coastlines consist of sedimentary rocks of the general types in which oil and gas are found. Proposed Sale No. 68 is in an area of known petroleum potential. The U.S. Geological Survey (USGS) estimates that the total United States' OCS may contain 34 percent of the mean conventionally producible undiscovered recoverable oil resources within a water depth of 2,500 meters along with 28 percent of the similarly defined natural gas resources (USGS, 1981).

The Federal government is authorized by Section 102.2 of the Outer Continental Shelf Lands Act, as amended, to:

preserve, protect, and develop oil and natural gas resources in the Outer Continental Shelf in a manner which is consistent with the (A) need to make such resources available to meet the nation's energy needs as rapidly as possible; (B) to balance orderly resource development with protection of the human, marine, and coastal environments; (C) to insure the public a fair and equitable return on the resources of the Outer Continental Shelf; and (D) to preserve and maintain free enterprise competition.

The purpose of this environmental impact statement (EIS) is to aid in fulfillment of Section 102.2(B) and the requirements of the National Environmental Policy Act by making environmental information available to public officials and citizens before decisions are made with respect to Proposed Sale No. 68.

The EIS and environmental review process are structured to assess the potential impacts to the environment of oil and gas operations in the affected Sale area. This EIS is not a local planning document. The facility locations and transportation scenarios described represent assumptions that were made for purposes of analysis and serve as a basis for identifying characteristic activities and any resulting environmental impacts and multiple-use conflicts. These assumptions do not represent a BLM recommendation, preference, or endorsement of any facility, site, or development plan. Local control of events may be exercised through planning, zoning, land ownership, and applicable State and local laws and ordinances.

B. Description of the Proposal

1. Description of the Proposal: This proposed Federal action is a April 1982 sale of specific oil and gas leases on the Outer Continental Shelf (OCS) offshore Southern California (See Figure I.B.1.a-1). This proposal is also referred to as Alternative 1.

a. Location and Hectarage of Proposed Sale: The proposed lease sale includes 218 tracts (see Appendix E) with a total area of about 450,415 hectares (1,112,975 acres). The Sale area is divided into three subareas (see Figure I.B.1.a-1 and Table I.B.1.a-1). However, for ease in determining resource estimates and oil spill impacts for this proposed lease sale only, tracts 98 through 197 were analyzed as part of the Inner Banks subarea (Figure IV.A.1.a-1) rather than as part of the Santa Barbara Channel subarea.

The subareas are geographically located in the following offshore areas: The Santa Barbara Channel containing the western, and eastern Santa Barbara Channel; Inner Banks containing Anacapa Area, Santa Monica Basin and the San Pedro Area; Outer Banks containing the area south of Santa Rosa Island, San Nicholas Basin, Dall Bank, Southeast Tanner Bank and Santo Tomas Knoll. The tracts range from Point Conception to south of San Clemente Island and lie in waters from about 46 to 1,500 m deep (150 to 4,900 feet). The tracts are no closer than three geographic miles from shore and range seaward to 84 miles.

After Proposed Sale No. 68 tract selection was completed, the Northern Channel Islands were designated as a National Marine Sanctuary. The boundary of the Channel Islands National Marine Sanctuary includes 13 complete and 24 partial tracts. Drilling may be prohibited within this sanctuary and since relevant decision points have not yet been reached for the Secretary to change the basic tract selection, an Alternative (2) is included to delete the tracts within the sanctuary. The proposal (Alternative 1) assumes normal hydrocarbon development within the 37 marine sanctuary tracts.

b. Estimated Oil and Gas Resources: The United States Geological Survey (USGS) Conservation Division, Los Angeles, California estimated the economically recoverable oil and gas resources within the proposed Sale tracts. The estimates noted on the left in Table I.B.1.b-1 are "conditional" probabilities. Conditional estimates assume that an area does, in fact, have hydrocarbon resources present. Methods do not exist which can accurately provide resource amounts prior to actual drilling. Thus, there is

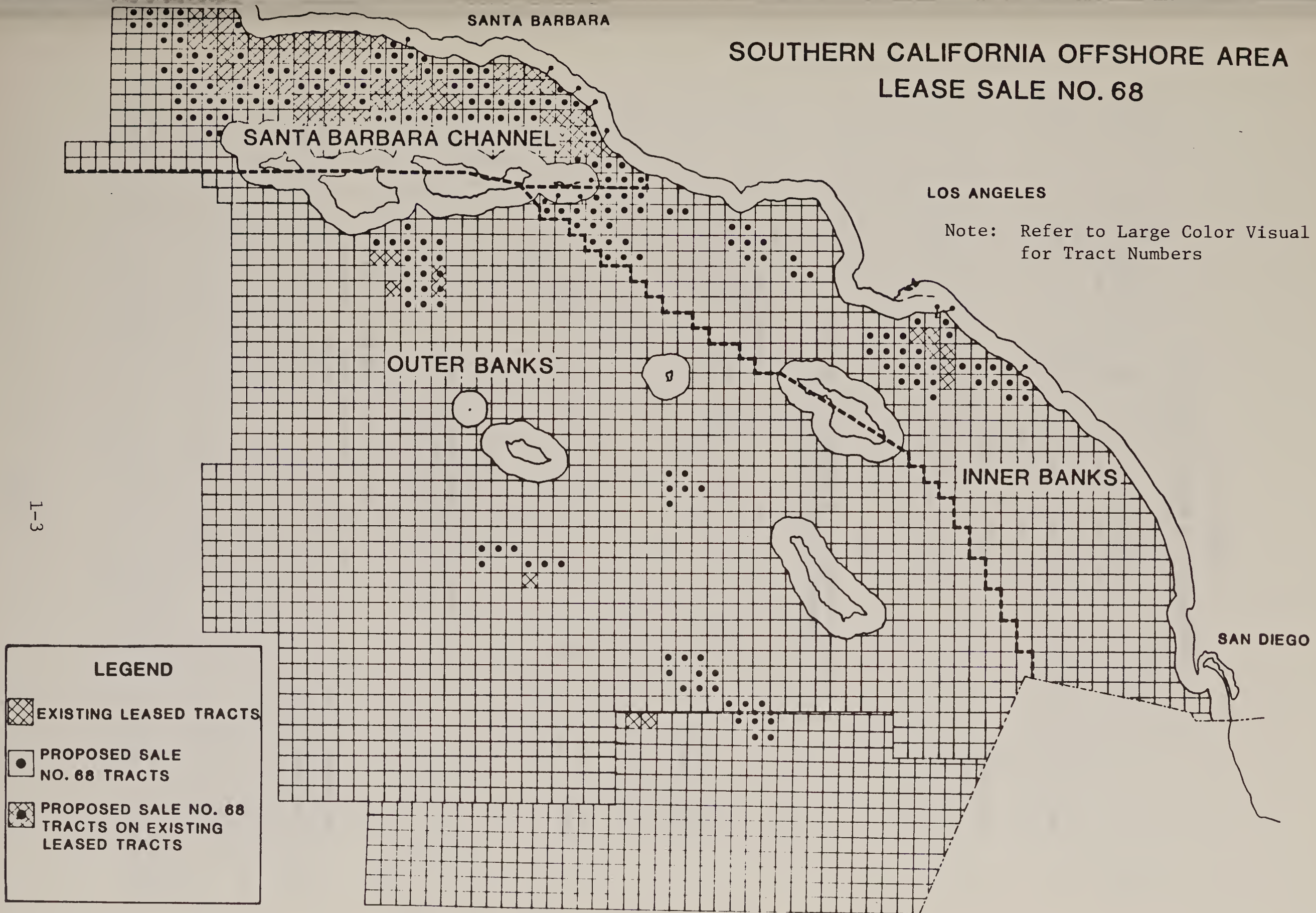


Figure I.B.1.a-1 Proposed Sale No. 68 Tracts, Existing Leases

1-3

TABLE I.B.1.a-1
AREAS INCLUDED IN PROPOSED SALE NO. 68

	Areas Hectarage	Acreage	No. of Tracts	Percent of Sale Area
Santa Barbara Channel	183,656	453,815	90	41
Inner Banks	151,353	373,992	75	34
Outer Banks	115,406	285,168	53	25
Total	450,415	1,112,975	218	100

TABLE I.B.1.b-1
ESTIMATED ECONOMICALLY RECOVERABLE OIL AND GAS
RESOURCES IN PROPOSED SALE AREA

Area	Conditional Mean		Risked Mean	
	Oil (Mil. Bbl.)	Gas (Bil. Cu. Ft.)	Oil (Mil. Bbl.)	Gas (Bil. Cu. Ft.)
Santa Barbara Channel	67	133	63	126
Inner Banks & Basins	70	93	35	46
Outer Banks & Basins	93	436	23	108

TABLE I.B.1.b-2
ESTIMATES OF LOW AND HIGH RESOURCE LEVELS
IN PROPOSED SALE AREA
(Conditional Probabilities)

Area	Oil (Mil. Bbl.)	Gas (Bil. Cu. Ft.)
Santa Barbara Channel	20-126	46-255
Inner Banks & Basins	16-140	22-193
Outer Banks & Basins	20-216	70-811

Source: USGS

a certain "risk factor" denoting the likelihood of hydrocarbons. When this factor is applied to the conditional estimates, a "risked" mean oil and gas estimate can be derived for tract economic evaluation purposes. Risked mean estimates are, then, the statistically expected amounts of resources based on presently available geologic information. Risked estimates incorporate the factor that some areas presumed to contain hydrocarbons will, in fact, turn out not to have oil and gas present after exploratory drilling has taken place.

The analysis in this Environmental Impact Statement is developed and derived from the conditional mean resource estimates and the associated levels of related activities, assuming oil and gas will be found at the levels estimated in the geologic formations. Both the conditional and risked means are presented in Table I.B.1.b-1. Note that the risked mean estimates will necessarily be less than the conditional mean estimates because they incorporate the risking factor.

There is a high degree of uncertainty regarding the level of oil and gas resources which might be present in OCS areas. Information is extrapolated from seismic investigations to establish the presence of oil and gas structures, but little substantive information is available because drilling has not taken place on most tracts. Under such circumstances, the resource estimates encompass a range of possibilities. When faced with conditions of uncertainty, a common statistical inference method notes the values that arise out of a sampling procedure. Estimates of resource values can be based on such a sampling distribution of the expected resource base. USGS has developed such an estimate of the resource base for Proposed Sale No. 68. Table I.B.1.b-2 gives these estimates of oil and gas at the 95 and 5 percent confidence intervals. Together they constitute the bounds of what is commonly termed the range. The lower figure in this table represents the reported range minimum amount of oil and gas believed to conditionally exist, while the higher figure represents the corresponding maximum. Note that these figures giving the high and low resource estimates in this table are "conditional" estimates, i.e., assuming hydrocarbons are present. The probability of success (discovery of reported oil resource amounts) for the mean conditional for each of the subareas is as follows: Santa Barbara Channel, 94 percent; Inner Banks and Basins, 50 percent; and Outer Banks and Basins, 25 percent. The total resource expected is, therefore, not simply the sum of the subarea estimates.

Future improvements in drilling technology and exploration science can affect estimates. Furthermore, changing economic conditions can materially affect the amount of economically recoverable resources. Planning for any offshore investment program involves an evaluation of exploration and development costs, operating expenses, price of oil and gas, taxes, royalty, and production rates. Differing assumptions regarding the future level of these factors would affect estimates of recoverable resources. All resource estimates used in this analysis represent only those resources believed to be economically recoverable. Thus, estimates of resource potential used here are inherently speculative--particularly so in areas where geologic information is limited and technologic and economic factors are subject to future changes.

c. Projected Transportation and Markets: Production of Proposed Sale No. 68 oil and gas is estimated to start in 1987 and continue into 2006 with maximum total daily production occurring during the period 1989-1993 for the three subareas. Resource supply, production, development, and transportation assumptions are based on the mean conditional estimates of oil and gas shown in Table I.B.1.b-1, unless otherwise noted. Note is made, where appropriate, in Section IV (Environmental Consequences) of the impacts on particular resource categories that would also result from the maximum and minimum estimates. Proposed Sale No. 68 crude production is expected to be refined in the Los Angeles basin refineries. If the oil companies decide to transport the Proposed Sale No. 68 crude production by tankers to refineries outside of the Los Angeles Basin, the probabilities of expected number of oil spills that are indicated in Section IV.A would increase slightly.

All oil production from this proposal is assumed to back out an approximately equal amount of either foreign or Alaskan imports to California, making more oil available for other parts of the U.S.

The following discussion details what are considered the most likely oil and gas transportation methods from each area. (A more detailed discussion of transportation scenarios is presented in POCS Technical Paper No. 81-1 (Yamasaki, 1981)).

Oil and gas production from the Santa Barbara Channel area is assumed to be transported by pipelines from the offshore platforms to shore (Scenario No. 1). Oil is expected to be processed on the platforms; gas, in the offshore processing facility. It is assumed that each proposed platform would have the capabilities to drill and process the crude; however, the oil companies may decide to have separate drilling and processing platforms or have a separate drilling platform with an OS&T. Oil and gas production from the platforms in the West Side Channel area is assumed to be transported by pipelines to an onshore location which is just east of Point Conception. Both pipelines would continue east and make pipeline connections at Las Flores Canyon. The gas line would connect to the proposed Pacific Offshore Pipeline Company's gas processing facility; the oil pipeline would connect to the Santa Barbara County onshore pipeline which would extend from Las Flores Canyon to Los Angeles Basin refineries. Oil and gas from the platform in the East Channel area would be transported by pipelines and connect to existing offshore pipelines near Carpinteria. For the optional transportation route (Scenario No. 2), crude oil in the Santa Barbara Channel area is assumed to be transported from onshore storage tanks by barges to refineries in the Los Angeles Basin.

Oil production from the Outer Banks area is expected to be processed and stored in storage tanks on the platforms and then transferred by barges to the Ports of Los Angeles and Long Beach. At each of the platforms there is assumed to be a Single Anchor Leg Mooring (SALM) system providing crude oil transfer and berthing facilities for barges. Oil is transported from the ports by existing onshore pipelines to the refineries within the Los Angeles Basin. The volume of gas, however, is expected to be insufficient for transportation by pipelines or by liquefying the gas and transporting it by tankers. The gas is likely to be used as fuel on the platform or reinjected into the wells.

Oil and gas production from the Inner Banks area is assumed to be transported from the offshore platforms to shore by pipelines. Both oil and gas are expected to be processed on the platforms. Oil and gas from the platform in the Anacapa - Santa Monica area would be transported by pipeline to an onshore location near El Segundo. A gas line is expected to connect to a nearby existing electric generating plant. An oil line is assumed to connect to the nearby refinery or to existing oil pipelines. Oil and gas production from the platform in the San Pedro area is expected to connect to pipelines near the Shell-Beta platforms. There is an existing oil line from the Shell-Beta platform to shore. It is assumed that a gas line will be installed and will parallel the existing oil line onshore. The gas line could connect to a nearby existing gas transmission line.

It is anticipated that the Proposed Sale No. 68 crude production would be refined in the Los Angeles Basin refineries which have the capability to process this crude. The limiting factors would be the sulfur content and American Petroleum Institute (API) gravity rating. Because California regional crude is relatively sour (high sulfur) and heavy (low API), sweet and light crudes are needed by certain refineries in order to balance feedstocks. Since the worldwide production trend is toward the heavier and more sour crudes, incentives would likely arise which could cause refineries to invest in facilities enabling them to process those crudes which would be an increasing proportion of total supply.

The Los Angeles Basin refineries are listed in Table III.C.6-1. Presently, these refineries have a refining capacity of 1.4 million barrels per calendar day (bcd). The estimated Proposed Sale No. 68 bcd for conditional mean could be 2.3 percent of the LA Basin refineries' capacity.

California OCS oil and gas has found, and will likely continue to find, a variety of intermediate and final product uses. The particular composition of end uses that might result from oil and gas produced in the region depends on institutional and economic relationships that would evolve during the life of the project. Generally, products of California refineries are consumed within the State, though Nevada and Arizona are also logical markets for the products from California refineries.

Since the number of oil spills is not significantly different between the two transportation scenarios, this EIS will concentrate on the impacts that would occur as a result of Transportation Scenario No. 1.

d. Basic Development Assumptions: It is assumed the proposed lease sale would lead to exploration for and potential development and production of oil and gas resources in the Southern California offshore area. The oil and gas operations that would normally take place begin with geophysical surveys and geological sampling programs designed to study the age, structure, and hydrocarbon potential of the area. Shallow core holes, bottom sampling, and deep stratigraphic test holes would be drilled to provide additional geologic and geochemical information.

After leasing, exploratory (wildcat) wells would be drilled on the best petroleum prospects as suggested by the geological and geophysical data in order to

locate, delineate, and characterize hydrocarbon reservoirs. These wells are usually drilled from semisubmersibles, jackups, and drillships. All three are assumed in this analysis. If commercially productive reservoirs are located, development wells are normally drilled from fixed platforms. These wells include production wells and a variety of service wells which increase the productivity of the field. The exploration and development phases of oil operations requires docking and onshore equipment storage, service facilities, helicopters, and attendant facilities. The development phase also requires offshore and onshore hydrocarbon storage and processing facilities as well as pipelines and/or deepwater tanker ports.

Using the resource estimates noted in Section I.B.1.b, the expected development timetable is given in Table I.B.1.d-1. The numbers in each category are given in a series of three for each year, expressing the amount that would result from the low mean and high resource estimates, respectively.

Using these development timetables, resource estimates, statistical data on past oil spills, and scenarios considered reasonable and appropriate, the following further development assumptions were made by USGS and BLM: 1) There would be statistically expected 1.1 spills of greater than 1,000 barrels and 0.5 spills greater than 10,000 barrels from the total sale area over the life of the project; 2) No petroleum refineries are expected to be constructed in California as a result of the proposed sale; 3) Pipelines as described in the Transportation Scenario would be required; and 4) Certain levels of formation water, drilling muds and cuttings, etc., would be discharged into the marine environment as a result from the proposed sale. These items are detailed in Table I.B.1.d-2. The environmental consequences are based on all these assumptions.

Many variables would affect the types and locations of facilities that would be required to support the exploration, development, and production of oil and gas resources, if discovered. A number of facility combinations are possible. Among these variables are the policies and controls of local, regional, State and Federal governments, and of private, corporate, institutional, and industrial landholders.

Proposed Sale No. 68 production is assumed to use certain facilities developed or expected to be developed as a result of existing federal and state leases issued during the last 20-30 years. This could include sharing of pipelines (offshore and onshore), onshore operation bases and certain platform facilities. All site-specific facilities developed for any Sale would be subject to all existing Federal, State, and local regulations, land use plans, policies, or controls. The analysis in this document uses the mean number of facilities (Table I.B.1.d-1).

An important determinant of the economic feasibility of producing OCS oil and gas is the cost of exploration, development, and production. These costs can vary widely within and between OCS provinces. The situation is further complicated by a number of factors which potentially affect costs: the type or combination of hydrocarbons present, the relationship between production

TABLE I.B.1.d-1

DEVELOPMENT TIMETABLE
(BASED ON "LOW-MEAN-HIGH" RESOURCE ESTIMATES)

SANTA BARBARA CHANNEL

	Exploratory Wells	Delineation Wells	Platforms Wells	Platforms	Subsea Completions
1981					
1982	1-3-5				
1983	2-9-16	2-6-9			
1984	3-12-21	3-8-13			
1985	3-10-17	3-10-16			
1986	1-6-10	5-16-25			
1987		2-8-12	3-9-18	1-1-1	
1988			5-13-24	1-1	
1989			4-12-23	1*	
1990			4-12-23		0-0-1
1991			1-6-11		0-0-1
1992					0-0-0
1993					
1994					
1995					
1996					
Total	10-40-69	15-48-75	17-52-99	1-2-3	0-0-2

INNER BANKS AND BASINS

	Exploratory Wells	Delineation Wells	Platforms Wells	Platforms	Subsea Completions
1981					
1982	1-1-6				
1983	1-2-11	1-2-7			
1984	2-3-17	1-3-11			
1985	1-3-17	2-5-18			
1986	1-4	2-6-22			
1987		1-3-12	2-9-19	1-1-1	
1988			4-17-34	0-1*-1	
1989			2-8-16	0-0-1*	
1990					0-0-1
1991					0-0-1
1992					
1993					
1994					
1995					
1996					
Total	5-10-55	7-19-70	8-34-69	1-2*-3*	0-0-2

*Deep Water

TABLE I.B.1.d-1 (Cont.)

OUTER BANKS AND BASINS

	Exploratory Wells	Delineation Wells	Platform Wells	Platforms	Subsea Completions
1981					
1982	1-1-6				
1983	1-2-11	2-3-6			
1984	1-2-17	3-5-11			
1985	1-2-17	3-5-11			
1986	0-1-4	4-8-17			
1987		1-4-9	1-5-11	1-1-1	
1988			2-9-20	0-1*-2*	
1989			3-14-31	0-1-2*	
1990			4-18-40	0-1*-1	0-0-1
1991			4-18-40		0-0-1
1992			1-17-29		0-0-1
1993					
1994					
Total	4-8-55	13-25-54	15-81-171	1-4-6*	0-0-3

*Deep Water

Source: U.S. Geological Survey and Bureau of Land Management

decline rates and costs, location considerations (e.g., climate and water depth), and the type of recovery and transportation technology used. For a detailed analysis of OCS cost factors see Mansvelt Beck and Wiig (1977).

With these factors in mind, Table I.B.1.d-3 is illustrative of the possible investment level resulting from Proposed Sale No. 68. This table gives the investment amounts estimated for the mean resource level. Manpower requirements were estimated for exploration, development, and production activities. Employment is expected to peak in 1985 during the exploratory drilling phases. Table I.B.1.d-4 shows estimated direct employment required to explore and develop the Proposed Sale No. 68 tracts. Transient labor is not included in this chart. These employment figures were used to develop indirect impacts on the region's employment.

TABLE I.B.1.d-2

DEVELOPMENTAL ASSUMPTIONS OVER PROJECT LIFE
(Based on Conditional Mean)

Area	Pipeline Offshore Miles	Pipeline Onshore Miles	Pipeline Burial Sediment (Cu. Yd.)	Drill Cuttings (1000 BBLs.)	Drill Muds (1000 BBLs.)	Formation Water (Mil.BBLs.)	Sewage (Gal/Day)
Santa Barbara Channel	28	0	0	183	117	67	7,600
Inner Banks and Basins	68	2	19,000	65	35	70	7,600
Outer Banks and Basins	0	0	0	146	68	93	15,200
TOTAL	96	2	19,000	394	220	230	30,400

TABLE I.B.1.d-3

ESTIMATED INVESTMENT - PROPOSED SALE NO. 68
(\$ MILLIONS)
BASED ON CONDITIONAL MEAN RESOURCE ESTIMATE

Area	Exploration Delineation Wells	Development Wells	Platform & Production Equipment	Pipeline Laying
Santa Barbara Channel	416.0	67.6	241.0	36.4
Inner Banks	77.5	51.1	301.3	88.4
Outer Banks	94.5	162.0	602.5	0

Source: U.S. Geological Survey and Bureau of Land Management

TABLE I.B.1.d-4

ESTIMATED DIRECT EMPLOYMENT - PROPOSED SALE NO. 68
RESIDENT LABOR ONLY
BASED ON CONDITIONAL MEAN RESOURCE ESTIMATES

Year	Santa Barbara Channel Tracts	Inner Banks and Basins Tracts	Outer Banks and Basins Tracts
1981	0	0	0
1982	40	7	8
1983	183	26	37
1984	255	41	51
1985	262	56	54
1986	288	50	68
1987	195	103	95
1988	131	127	88
1989	102	60	125
1990	104	20	158
1991	63	20	136
1992	20	20	133
1993	20	20	40
1994	20	20	40
1995	20	20	40
1996	20	20	40
1997	20	20	40
1998	20	20	40
1999	20	20	40
2000	20	20	40
2001	20	20	40
2002	20	20	40
2003	20	20	40
2004	20	20	40
2005	20	20	40
2006	20	20	40

2. Administrative Events Leading Up to Proposal: Under the Outer Continental Shelf (OCS) Lands Act of August 7, 1953, (43 U.S.C. 1331-1343), as amended (92 Stat. 629), and the regulations issued thereunder (43 CFR 3300), the Department of the Interior is responsible for administering the mineral development of the Outer Continental Shelf. In the case of oil and gas development, the process involves several steps. These are as follows: 1) OCS Oil and Gas Leasing Schedule; 2) Request for Resource Reports; 3) Call for Nominations and Comments; 4) Tentative Tract Selection; 5) Scoping; 6) Draft Environmental Impact Statement and subsequent Public Hearings; 7) Endangered Species Consultation; 8) Final Environmental Impact Statement and Secretarial Issue Document; 9) Coordination with State(s); 10) Notice of Sale; 11) Sale; 12) Activity after a Sale; 13) Environmental monitoring.

The specifics of each step as they relate and will relate to proposed Lease Sale No. 68 are as follows:

a. OCS Oil and Gas Leasing Schedule: Section 208 of the Outer Continental Shelf Lands Act Amendments of 1978 (43 U.S.C. 1331 et. seq.) provides for new subsection 18 which requires that the Department of the Interior prepare "...an oil and gas leasing program...(which) shall consist of a schedule of proposed lease sales indicating...the size, timing, and location of leasing activity which...will best meet national energy needs for the 5-year period..." In June, 1979, a proposed leasing program, which built upon the existing schedule, was formally submitted to Congress. Size, timing, and location of sales were considered in developing the proposed Leasing Schedule. Offerings are scheduled in all areas of the OCS where there are indications of hydrocarbon resource potential. Proposed Sale No. 68 follows a June, 1979, Sale in the Southern California offshore in anticipation of continued orderly development of the region. Since the 1966 drainage sale, approximately 4 percent of the Southern California region has been leased. This compares to 14 percent of the Gulf of Mexico region which has been leased. The proposed leasing program was also submitted to Governors of affected coastal States, the U.S. Attorney General, and published in the Federal Register. A Final Environmental Impact Statement (FEIS) was prepared on the 5-year Leasing Schedule and was available to the public in January, 1980. A final 5-year Leasing Schedule (June, 1980 through June, 1985) was announced in June, 1980.

b. Request for Resource Reports: On May 29, 1979, the Bureau of Land Management issued a Request for Resource Reports for the Pacific OCS area extending from Point Conception on the north to the Mexican Border on the south and seaward to approximately 200 miles. Requests were submitted to 34 Federal and State agencies and eight interested individuals. Information was sought regarding other valuable resources and uses of the area and the possible impacts of mineral operations upon these resources. Recommendations concerning the resolution of any conflicts between the activities of these agencies and oil and gas leasing/development in the OCS area were also requested.

c. Call for Nominations and Comments: On December 28, 1979, the Bureau of Land Management (BLM), pursuant to the authority prescribed in 43 CFR 3313.1, issued a Call for Nominations and Comments (Federal Register, Vol. 44, No. 250). The Call asked that specific areas on the Southern California OCS be identified relative to possible oil and gas leasing under

the OCS Lands Act. The area under consideration for the proposed sale totaled approximately 2,900 blocks and covered an estimated 6,600,000 hectares (16,300,000 acres). The petroleum industry was asked to designate specific tracts on which it would like to bid if a Sale were held. The request also asked Federal, State, and local governments, other industries, universities, research institutions, environmental organizations, and the public to identify specific tracts they believed should be excluded from oil and gas leasing, or leased only under certain restrictions because of conflicting resource values or environmental factors.

In response to the Call for Nominations and Comments, on March 31, 1980, BLM announced that 10 oil companies nominated 609 blocks totaling 1,295,546 hectares (3,200,000-acres). In addition to the industry nominations, 94 comments were received from Federal, State, and local government units as well as environmental groups and private citizens expressing either concern about offshore leasing in general or recommending that specific tracts be deleted.

Upon completion of the Nomination period, Section 8(g) of the OCS Lands Act, as amended, requires the Secretary of Interior to offer the Governor(s) of the affected state(s) an opportunity for agreement on the disposition of revenues generated from resources underlying both Federal and State lands. Should the proposed agreement be rejected by the Governor(s) of the affected State(s), this section contains other provisions to obtain the fair and equitable distribution of revenues from hydrocarbon deposits under both Federal and State lands.

d. Tentative Tract Selection: On May 30, 1980, the Department of the Interior announced selection of 221 tracts comprising 457,479 hectares (1,130,415 acres) for intensive environmental study for Proposed Sale No. 68. Although 221 tracts were included in the tentative tract selection, tracts originally numbered 69, 76, and 77 are considered as a part of the proposal. These tracts are now in the Santa Rosa Unit Area as approved by the U.S. Geological Survey in July, 1980. They represent a 6,993 hectare (17,280 acre) reduction in the Sale area as originally proposed. The remaining 218 tracts are listed in Appendix E and mapped on the large color visual. Preliminary tract selection meetings were held in Los Angeles and Washington, D.C. They included representatives of the California Governor's Office of Planning and Research, California State Lands Commission, California Coastal Commission, County of Santa Barbara, City of Los Angeles, and Federal agencies.

e. Scoping: Subsection 1501.7 of the Council on Environmental Quality's National Environmental Policy Act Regulations (40 CFR 1501) requires that there be "an early and open process for determining the scope of issues to be addressed in an EIS and for identifying the significant issues related to a proposed action." In accordance with this regulation, BLM-POCS contacted various interested parties (see Section VII) and conducted a series of nine EIS scoping meetings in Southern California.

Meetings were held in each of the following cities on the dates and times shown.

Newport Beach August 4, 1980

8:00 am - 12:00 noon
1:00 pm - 4:00 pm

San Pedro August 5, 1980

8:00 am - 12:00 noon
1:00 pm - 4:00 pm

Ventura August 11, 1980

1:00 pm - 4:00 pm
7:00 pm - 10:00 pm

Santa Barbara August 12, 1980

8:00 am - 12:00 noon
1:00 pm - 4:00 pm

Los Angeles September 15, 1980

9:30 am - 11:30 am
(for Pacific States Regional
Technical Working Group)

At each location, except Los Angeles, the first meeting was aimed at Federal, State, and local government agencies/representatives and special interest groups. The latter was represented, for example, by the Western Oil and Gas Association and Get Oil Out. The second meeting was intended for the general public.

The scoping meetings emphasized seven points relative to OCS leasing and the proposed sale: 1) an overview of the leasing process, 2) history, 3) legal authority, 4) purpose and goal of scoping, 5) EIS format and structure, 6) fifteen major issues, and 7) alternatives to the proposed action. After presentations on the above topics were completed, the attendees were encouraged to comment and participate with staff specialists in discussions. Franked, self-addressed envelopes were provided for anyone wishing to make future comments.

Prior to holding these meetings, an invitational letter, agenda, and locational listings were sent to 442 groups in Southern California. These included the following:

Media outlets	92
City officials/agencies	89
Elected/appointed officials	45
Oil and gas industry	51
State agencies	27
Federal agencies	30
Academic institutions	16

Special interest groups	38
Association of governments	2
Southern California businesses	35
Southern California counties/ Officers	34

In spite of this extensive notification process, the attendance at the scoping meetings was low, ranging from two (2) attendees to a maximum of twenty-eight (28) at Santa Barbara.

No new alternatives to the proposal were recommended by scoping participants. Major issues discussed at the various locations are shown in Table I.B.2.e-1.

The September 15, 1980 scoping meeting was held for the Pacific States Regional Technical Working Group. The Group made a formal recommendation comprised of the following five issues:

1. There should be a discussion of the Proposed Sale No. 68 tracts which were included in the environmental assessment process for past Sales and were withdrawn prior to the Sale. The tracts previously withdrawn should be listed and accompanied by a discussion of why each was withdrawn and why each is being reconsidered at this time. A map showing these tracts should be included with the discussion.
2. A cost/benefit - risk/benefit analysis of the proposed action and alternatives should be performed.
3. A local impact analysis using improved socio-economic models should be used in determination of impacts. Information regarding socio-economic impacts should be collected, analyzed, and presented at both county and subcounty levels.
4. The National and State energy needs should be discussed relative to the contribution of Proposed Sale No. 68 and ongoing energy activity in the region.
5. There should be a discussion of the cumulative effects of leasing (Federal OCS and State Tidelands) in the Southern California Bight and associated areas to include environmental and socio-economic impacts. The competition for space in the Santa Barbara Channel between commercial vessels, platforms, fishing interests, etc., should be analyzed.

In addition, several letters were received from public agencies, special interest groups, and private individuals during the early stages of the scoping process. The major issues submitted in writing are listed in Table I.B.2.e-2. Whenever possible, all the above concerns were examined and are discussed in the EIS.

f. Draft Environmental Impact Statement (DEIS) and Subsequent Public Hearings: Pursuant to section 102(2)(c) of the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347), the Department of the Interior's Bureau of Land Management announced on December 23, 1980 (Federal Register,

TABLE I.B.2.e-1

MAJOR ISSUES DISCUSSED AT SCOPING MEETINGS

<u>Meeting Location</u>	<u>Primary Potential Issues, Impacts, Conflicts</u>
Newport Beach	<ol style="list-style-type: none"> 1) Prehistoric archaeological sites on the OCS 2) Submarine transit lanes 3) Pacific Missile Test Range 4) Nearshore marine mammals 5) Intertidal marine life 6) Adequacy of BLM oil spill model
San Pedro	<ol style="list-style-type: none"> 1) Land use in Huntington Beach by oil and gas operators 2) Collision potential, off Port of Long Beach, between platforms and ships 3) Liability for damage to Port of Long Beach 4) Marine life
Ventura	<ol style="list-style-type: none"> 1) Marine life 2) Shipwrecks and aboriginal sites on the OCS
Santa Barbara	<ol style="list-style-type: none"> 1) Cumulative impacts of previous sales 2) Increased quantities of oil on beaches 3) Studies to determine cause of increased oil on beaches 4) Marine Sanctuary 5) Commercial fishing conflicts, particularly debris, obstructions on sea bed 6) Air quality 7) Marine Sanctuary 8) Pipeline corridors and seismicity 9) Inaccurate baseline data on air quality, surface currents, rig monitoring 10) Lack of previous contracts awarded to Santa Barbara residents 11) Santa Barbara Channel Ecological Preserve Buffer Zone

TABLE I.B.2.e-2

MAJOR ISSUES SUBMITTED IN WRITING DURING
THE EARLY STAGES OF SCOPING

Pace of Leasing and Development
 Air Quality
 Geology
 Navigation
 Oil Spills
 Aesthetics
 Seismicity
 Tourism, Recreation
 Multiple Use
 Need to Discuss Alternatives to Proposed Sale
 Oil Spill Containment
 Fishing
 ASBSs
 Marine Sanctuaries
 Federal Buffer Zone
 Offshore Islands
 Environmentally Sensitive Coastline
 Deep Water Tracts
 Housing
 Socio-Economics
 Military Operating Areas
 Groundwater Contamination
 Water Quality
 Conservation and Alternative Energy

Vol. 45, No. 248) that it intended to prepare an EIS for the purpose of considering the effects of Proposed Sale No. 68 offshore Southern California. The DEIS considered all available data and information available up to this time and evaluates potential effects of the action on the marine environment, air quality, recreation, archaeology, geology, and socio-economics in the area. The DEIS was made available for public review and public hearings are then held. Public hearings on the Draft EIS were held in Santa Barbara, CA on July 28 and 29, 1981 and in Long Beach, CA on July 30 and 31, 1981 (also see Section VII). The DEIS was then updated to a Final Environmental Impact Statement.

g. Endangered Species Consultation: As required by the Endangered Species Act of 1973, as amended, BLM and USGS consulted with FWS and NMFS to ensure that the leasing and exploration phases of Proposed Sale No. 68 are not likely to jeopardize the continued existence of endangered or threatened species, or destroy or adversely modify the critical habitat of such species. The biological opinions provided by FWS and NMFS are included in Chapter VII. If any development and production activities result from the proposed Sale, USGS and BLM will consult as needed, when sufficient information is available to evaluate the proposals in detail and render a biological opinion.

h. Final Environmental Impact Statement (FEIS): The FEIS reflects Department of the Interior consideration of all comments received, including those from the public and Federal, State, and local officials. The Final Impact Statement is filed with the Environmental Protection Agency (EPA) and a 30-day waiting period must follow before any decision is possible. None of the steps outlined above constitutes a decision to hold a Sale. All are required as part of the process for compliance with NEPA, and are spelled out in regulations issued by CEQ and the Department of the Interior. At this stage, the decision is usually tentative. Normally, no decision is entertained until the Proposed Notice of Sale (released concurrently with the FEIS) is commented upon by the States. This period usually runs at least 60 days following FEIS release. Further coordination follows.

i. Coordination with State: Section 208, subsection 19, of the OCS Lands Act Amendments of 1978 provides for coordination and consultation with affected State and local governments. If the Secretary of the Interior makes a preliminary decision to hold a Sale, the Governor of the affected State has 60 days in which to make recommendations. Thereafter, the Secretary of the Interior will respond to the "...Governor's recommendations, or...implement any alternative means identified in consultation with the Governor to provide for a reasonable balance between the national interest and the well-being of the citizens of the affected State."

j. Notice of Sale: If a final decision to hold the Sale is then made by the Secretary of the Interior, he will specify what tracts shall be offered and what terms and conditions are to be imposed on lease purchasers. The Sale Notice will be published in the Federal Register. Under the current OCS planning schedule, the Notice of Sale for Proposed Sale No. 68 would be issued in May, 1982. However, this schedule may be revised in the near future.

k. Sale: Outer Continental Shelf oil and gas lease sales are open to the public. Under the current OCS planning schedule, Proposed Sale No. 68 is scheduled for June 1982. However, this schedule may be revised in the near future.

l. Activity After a Sale: Continued formal and informal contacts with the State for future planning and discussion of onshore facilities are conducted, as well as coordination under Department of the Interior Manual 655 with USGS, FWS, and NPS. The U.S. Geological Survey assumes operational responsibility for the activity which follows. However, both USGS and BLM issue permits for OCS pipelines. Further information is provided in Section I.B.7.

m. Environmental Monitoring: BLM will consider environmental monitoring studies for the areas leased as a result of a Sale. Each area would be evaluated on a case-by-case basis to design an effective monitoring program responsive to management questions. Special monitoring studies may be required for areas identified as having a special resource value. Appropriate State officials are contacted on a continuing basis in a consulting capacity. BLM will provide for a free flow of information to keep the State informed of the status of any monitoring program. The State will be informed through the OCS Advisory Board, through State liaison officers, and through the activities of the Pacific Outer Continental Shelf Office. Please see Section I.B.4, Environmental Studies, for a brief description of the monitoring program.

3. Regulatory Framework

a. Legal Mandates and Authority

OCS Lands Act. The Outer Continental Shelf Lands Act of 1953 (67 Stat. 462), as amended in 1978 (P.L. 95-372; 92 Stat. 629), established Federal jurisdiction over submerged lands on the Outer Continental Shelf (OCS) seaward of State boundaries (generally 3 geographic miles seaward of the coastline). Under the OCS Lands Act, the Secretary of the Interior is responsible for the administration of mineral exploration and development of the OCS. The Act empowers the Secretary to grant leases to the highest qualified responsible bidder(s) on the basis of sealed competitive bids and to formulate such regulations as necessary to carry out the provisions of the Act.

The Act, as amended, provides guidelines for implementing an OCS oil and gas exploration and development program. The basic goal of the Act is to expedite exploration and development of the OCS minerals in order to achieve national economic and energy policy goals, assure national security, reduce dependence on foreign sources of oil, and maintain a favorable balance of payments in world trade. With respect to implementing a leasing program, this goal is constrained by the following considerations: (1) the receipt of fair and equitable return on oil and gas resources; (2) preservation and maintenance of competition; and (3) balancing orderly energy resource development with protection of the human, marine, and coastal environments.

The Secretary of the Interior has designated the Bureau of Land Management as the administrative agency responsible for the leasing of submerged Federal lands, and the Geological Survey (USGS) for the supervision of offshore operations after lease issuance. Regulations administered by the Bureau of Land Management govern the leasing of mineral deposits on the OCS and the granting of rights-of-way for pipelines and are found at 43 Code of Federal Regulations, Part 3300. Regulations administered by the Geological Survey governing the conduct of mineral operations are contained in 30 CFR Part 250, and are supplemented by OCS operating orders on an area-specific basis.

Major requirements of the Act and its implementing regulations, many of which mitigate adverse impacts resulting from OCS leasing and development, follow:

- o In the enforcement of the safety, environmental, and conservation laws and regulations, the Secretary shall cooperate with the relevant departments and agencies of the Federal Government.
- o The Secretary is authorized to suspend or temporarily prohibit an operation or activity pursuant to a lease or permit.
- o The Secretary is authorized to cancel a lease or permit.
- o The Secretary is authorized to issue regulations for unitization, pooling, and drilling agreements.

- o The Secretary is authorized to issue regulations to prevent OCS operations from adversely affecting the national ambient air quality standards.
- o The Secretary may cancel a nonproducing lease for the owner's failure to comply with any of the provisions of the act, the lease, or regulations under the act.
- o The Secretary may initiate judicial proceeding to cancel a producing lease because of the owner's failure to comply with any of the provisions of the act, the lease, or regulations under the act.
- o Rights-of-way may be approved under such regulations and upon such conditions as may be prescribed by the Secretary, assuring maximum environmental protection by utilization of the best available and safest technologies.
- o Exploration must be undertaken pursuant to an approved exploration plan. An environmental report is also submitted for review. The environmental report is used by DOI to prepare an Environmental Assessment (EA) or an EIS as necessary. No permit for drilling may be issued until all affected States with approved coastal zone management programs have concurred or been presumed to concur with the consistency determination provided by the lessee.
- o Geological explorations on unleased areas of the OCS shall be allowed only if such exploration will not be unduly harmful to aquatic life in the area, result in pollution, create hazardous or unsafe conditions, unreasonably interfere with other uses of the area, or disturb any site, structure, or object of historical or archaeological significance.
- o Governors of affected States may submit recommendations to the Secretary regarding the size, timing, or location of a proposed lease sale, or with respect to a proposed development and production plan.
- o The Secretary is authorized to enter into cooperative agreements with affected States for several purposes, including but not limited to sharing of information, joint utilization of available expertise, joint planning, review, and permitting procedures, and the formation of joint surveillance and monitoring arrangements relevant to OCS operations, both onshore and offshore.
- o The Secretary shall conduct a study of any area or region included in any oil and gas sale in order to establish information needed for assessment and management of environmental impacts on the human, marine, and coastal environments of the OCS and the coastal area which may be affected by oil and gas development in such area or region.
- o Subsequent to the leasing and development of any area or region, the Secretary shall conduct additional studies to establish environ-

mental information and shall monitor the human, marine, and coastal environments of such area or region.

- o The Secretary shall consider relevant environmental information in making decisions, in developing appropriate regulations and lease conditions, and in issuing operating orders.
- o In exercising their respective responsibilities, the Secretary and the Secretary of the Department in which the Coast Guard is operating shall require, on all new drilling and production operations and, wherever practicable, on existing operations, the use of the best available and safest technologies (BAST)^a. The Secretary determines the economic feasibility of utilizing the BAST. Wherever failure of equipment would have a significant effect on safety, health, or the environment the Secretary shall require use of BAST, unless he determines that the incremental benefits are clearly insufficient to justify the incremental costs of utilizing such technologies.
- o The holder of a lease or permit shall maintain all operations within such lease area or within the area covered by such permit in compliance with regulations intended to protect persons, property, and the environment on the OCS.
- o The Secretary of the Interior, the Secretary of the Department in which the Coast Guard is operating, and the Secretary of the Army shall enforce safety and environmental regulations promulgated under the Act. The Secretary and the Coast Guard shall promulgate regulations for on site inspections of OCS facilities.
- o Any person having a valid legal interest which is or may be adversely affected may commence a civil action to compel compliance with the OCS Lands Act against any person, including the United States, for any alleged violation of any provision of the OCS Lands Act, or regulation promulgated thereunder, or terms of any permit or lease issued under the OCS Lands Act.
- o The Attorney General or a U.S. Attorney may institute a civil action for a temporary restraining order, injunction, or other appropriate remedy to enforce any provisions of the OCS Lands Act, regulation or order issued under the Act or any terms of a lease, license, or permit issued under the Act.

^aPlease see the following: The Use of Best Available and Safest Technologies (BAST) During Oil and Gas Drilling and Producing Operations of the Outer Continental Shelf (OCS). Single copies available from: Office of Deputy Division Chief for Offshore Mineral Regulation, USGS, Mail Stop 640, Reston, VA 22092.

- o Prior to development and production of an oil and gas lease, the lessee shall submit a development and production plan to the Secretary for approval. An environmental report is also submitted for review. The environmental report is used by DOI to prepare an Environmental Assessment (EA) or an EIS as necessary.
- o The Secretary shall disapprove a development and production plan if:
 - a. the lessee fails to demonstrate he can comply with requirements of the OCS Lands Act or other applicable Federal law;
 - b. activities described do not receive a consistency concurrence by a State with an approved CZM plan;
 - c. operations threaten national security or defense; or
 - d. (1) exceptional geologic conditions, exceptional values in the marine or coastal environment or other exceptional conditions exist, and that implementation of the plan would probably cause serious harm or damage to life, to property, to any mineral deposits,....or to the marine, coastal, or human environments; (2) the threat of harm or damage will not disappear or decrease to an acceptable extent within a reasonable period of time; and (3) the advantages of disapproving a plan outweigh the advantages of development and production.
- o The Secretary shall not grant a license or permit for any activity in an exploration, development or production plan affecting any land or water use in the coastal zone of a State with an approved Coastal Zone Management plan, unless the State concurs or can be presumed to concur with the consistency certification accompanying such plan.
- o The Secretary shall, from time to time, review each development and production plan. If the review indicates that the plan should be revised to meet the requirements of Section 25 of the OCS Lands Act, the Secretary shall require such revision.
- o The Secretary shall provide affected States with information to assist them in planning for the onshore impacts of possible oil and gas development and production.
- o The Secretary of the Department of Transportation shall administer the Offshore Oil Spill Pollution Fund establishing compensation for injuries caused by oil discharge from an offshore facility or vessel. (See Section I.B.7 below).

- o The Secretary of the Department of Commerce shall administer the Fishermen's Contingency Fund which provides compensation for damage to fishermen's gear or vessels resulting from oil and gas exploration, development, and production. (See Section I.B.7 below).

Relationship of the Proposed Sale to the Overall OCS Leasing Program. Section 18(a) of the OCS Lands Act, as amended, provides that "The Secretary...shall prepare and periodically revise, and maintain an oil and gas leasing program...". In compliance with the Act, the Secretary of the Interior submits a proposed leasing program to the Congress, the Attorney General, and the Governors of affected States. The leasing program consists of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity which will best meet national energy needs for the 5-year period following its approval or reapproval. The goal of the leasing program is to provide for orderly development of OCS oil and gas resources and to maintain an adequate contribution of OCS production to the national supply in order to reduce dependence on foreign oil.

The United States has three overriding energy objectives outlined in the National Energy Plan:

- as an immediate objective that will become even more important in the future, reduce dependence on foreign oil and vulnerability to supply interruptions;
- in the medium term, to keep U.S. imports sufficiently low to weather the period when world oil production approaches its capacity limitation; and
- in the long term, to have renewable and essentially inexhaustible sources of energy for sustained economic growth.

Full development of OCS resources is an integral part of that plan (the National Energy Plan, Executive Office of the President, Energy Policy and Planning, 1977).

The current 5-year OCS Oil and Gas Lease Schedule was issued in June, 1980. Revisions to the June, 1980 schedule have been proposed and the environmental impacts of the revision evaluated. The Supplement to the Final EIS will be issued October, 1981. Secretarial action is expected in February, 1982.

The proposed OCS leasing schedule (July, 1981) provides a schedule of Sales for 1982 through 1986. The proposed schedule plans Proposed Sale No. 68 in April, 1982.

The 5-year OCS leasing program does not represent a decision to lease in a particular area. It represents only the Department's intent to consider leasing certain areas, and to proceed with the leasing of such areas if it should be determined that leasing and development in such areas would be environmentally acceptable and technically feasible.

Federal/State Coordination. The OCS Lands Act, as amended, provides a statutory foundation for the Department's policy of coordination of OCS activities with affected States and, to a more limited extent, local governments. At each step of the procedures that lead to lease issuance, participation from affected States and other interested parties is encouraged and sought. Below is a detailed discussion of coordination mechanisms required by the OCS Lands Act.

The Secretary of the Interior is required to invite and consider suggestions from the Governor of any affected States during preparation of any proposed leasing program prior to its publication in the Federal Register. The Secretary is required to provide a written response to any request from a Governor for modification of a proposed leasing program. State and local governments may comment directly on a proposed leasing program in its published form. The Secretary is obligated to establish procedures for review of proposed leasing and periodic consultation with State and local governments (Section 18).

Within 60 days after notice of a proposed lease sale or receipt of a development and production plan, the Governor of any affected State may make recommendations to the Secretary with regard to the size, timing, or location of the proposed lease sale or development and production plan. If the Secretary determines that any such recommendations provide for a reasonable balance between the well-being of the citizens of the affected State and the national interest, he must accept them. The Secretary must also respond to the Governor in writing, giving his reasons for accepting, rejecting, or modifying the Governor's recommendations. The Secretary may enter into cooperative agreements with affected States, for purposes consistent with the Act and other applicable Federal law (Section 19).

When soliciting nominations for the leasing of lands within 3 miles of the seaward boundary of any coastal State, additional information is to be provided to the Governor of those States. The Governor must be informed of the identity of and schedule for the area proposed for leasing; the geographical, geological and ecological characteristics of the area within 3 miles of the seaward boundary; an estimate of oil and gas reserves in these areas; and any field, trap, or geologic structures thought to be located in these areas. After the close of the call period, the Governor is informed of any area which merits further consideration for leasing (Section 8(g)).

Under Section 25 of the Act, the Secretary must submit copies of development and production plans to the Governor of any affected State for review. The State then has 60 days to provide comments and recommendations to the Secretary. Section 11 of the Act and the regulations contained in 30 CFR 250.34 also require that any exploration plans submitted to the Secretary must be approved or disapproved within 30 days. Written comments from the Governor of any affected State will be considered prior to approval action if they are timely.

Under Section 26 of the Act, the Secretary must make available to affected States a summary of data to aid them in anticipating possible onshore effects of OCS development and production. The summary includes estimates of oil and gas reserves in areas leased or to be leased, estimated size and timing of

development, pipeline location, and the general location and nature of onshore facilities.

The Act also requires preparation and transmittal to each affected State of an index of all relevant actual or proposed programs, plans, reports, environmental impact statements, tract nominations, and other lease sale information. On request, the Secretary must send copies of these documents to the affected State (Section 26).

Santa Barbara Channel Ecological Preserve and Buffer Zone. The Santa Barbara Ecological Preserve was established March 21, 1969 by Public Land Order 4587. The Preserve consists of ten full and partial tracts "withdrawn from all forms of disposition, including mineral leasing, and reserved for use for scientific, recreational, and other similar uses." Eight additional tracts (full and partial) adjacent to the Preserve were designated as an "adjunct to the Ecological Preserve." These tracts have become known as the Buffer Zone and were removed from consideration for leasing by the Order. This Order reflects Department of the Interior past policy regarding OCS leasing in this area. Leasing in the adjunct to the Santa Barbara Channel Ecological Preserve will require a change in that policy.

b. Authorities of Federal Regulatory Agencies

Department of the Interior. The Bureau of Land Management and U.S. Geological Survey are Department of the Interior agencies with direct OCS regulatory and enforcement authority. BLM implements the OCS leasing regulations under 43 CFR Part 3300 and cooperates with USGS and other Federal agencies to develop special stipulations that apply to either specific leases or all leases within the proposed lease areas. These stipulations address such matters as cultural and biological resources, pipeline rights-of-way, disposition of drilling wastes, and equipment identification. In addition to issuing leases, BLM issues rights-of-way for pipelines on the OCS which are not wholly contained within the boundaries of a single lease, the boundaries of unitized leases, or the boundaries of contiguous leases of the same owner or operator.

USGS administers regulations governing lease operations, including exploration and development of the OCS under 30 CFR Part 250. These regulations are the basis for OCS Orders which apply to operations in the proposed lease area. See Section I.B.5 for a discussion of USGS Orders for the proposed lease area. Additionally, USGS maintains jurisdiction over producer-owned gathering lines and flowlines on the OCS. These are pipelines restricted to a leasehold or unit.

The Department of the Interior has promulgated regulations describing a program for regulating air pollution from OCS operations. The final regulations which became effective as of June 2, 1980, were published in the Federal Register on March 7, 1980 and are codified as 30 CFR 250.57.

The U.S. Fish and Wildlife Service (USFWS) shares responsibility with other agencies for protection of fish and wildlife resources and their habitats, and acts in an advisory capacity in the formulation of OCS leasing stipulations. USFWS also provides recommendations to the Corps of Engineers in the issuance of Federal permits to industry for construction in navigable waters. USFWS is

responsible for the protection and stewardship of certain species covered under the Endangered Species Act of 1973, as amended.

U.S. Army Corps of Engineers. The OCS Lands Act extends to the OCS the authority of the Secretary of the Army to prevent obstruction to navigation in U.S. navigable waters. Section 10 of the Rivers and Harbor Act of 1899 requires that permits be issued for all offshore construction, including pipelines, in U.S. navigable waters.

Permits must also be issued for onshore facilities in which dredging and filling of U.S. navigable waters are involved. Structure permits for exploratory drilling vessels and for fixed and mobile platforms are issued by the Corps. Permits for structures in State waters must consider environmental requirements before the issuance pursuant to Section 404 of the Clean Water Act. Section 404 also delegates regulatory authority to the Secretary of the Army over discharge of dredged or fill material in wetlands.

Department of Transportation. The OCS Lands Act grants authority to the Coast Guard to promulgate and enforce regulations covering lighting and warning devices, safety equipment, and other safety-related matters pertaining to life and property on fixed OCS platforms and drilling vessels. Through the Coast Guard, the Department of Transportation (DOT) advises the Corps of Engineers on the issuance of permits and the placement of offshore structures. Under the Port and Waterways Safety Act of 1978, the Coast Guard has the authority to establish shipping safety fairways and other ship routing systems in which OCS structures may be prohibited. The Coast Guard also has jurisdiction to enforce the Clean Water Act on the OCS.

Under the Clean Water Act, the U.S. Coast Guard approves the procedures to be followed and the equipment used for the transfer of oil from vessel to vessel and between onshore and offshore facilities and vessels. The Coast Guard also conducts pollution surveillance patrols to detect oil discharges within territorial and contiguous waters and has enforcement authority over violations. The Coast Guard also has strike team responsibilities should an oil spill occur.

The Materials Transportation Bureau (MTB) is responsible for establishing and enforcing design, construction, operation, and maintenance regulations for pipelines. The Department of Transportation's responsibility and authority is further defined in a Memorandum of Understanding between it and the Department of the Interior.

Department of Commerce. The Department of Commerce, through the National Oceanic and Atmospheric Administration (NOAA) and the National Marine Fisheries Service (NMFS), is responsible for protection of marine fishery resources and their habitats, and for providing recommendations to the Corps of Engineers regarding the issuance of permits in navigable waters. NOAA participates in making recommendations to the BLM pertaining to OCS leasing and development through a Basic Agreement for Program Coordination. BLM participates in a number of NOAA activities under the same Basic Agreement.

The Department's responsibility and authorities related to OCS development include the Fishery Conservation and Management Act of 1976, the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, the Fur Seal Act of 1966, Title II of the Marine Protection, Research, and Sanctuaries Act of 1972 ("Comprehensive Research on Ocean Dumping"), and the National Ocean Pollution Research and Development and Monitoring Act of 1978.

The Department of Commerce also administers the Coastal Zone Management Act (CZMA) of 1972, as amended, through the National Oceanic and Atmospheric Administration. The CZMA encourages the development and implementation of coastal management programs for the sound management of State coastal resources by providing a system of grants, loans, and loan guarantees to the States. Once developed, the program is then submitted to the Secretary of Commerce for approval after which the Coastal Management Program (CMP) may be implemented. California has an approved CMP which is currently being implemented. Section I.B.8.a of this document provides additional information.

Section 307 of the CZMA contains the Federal consistency provision which imposes certain requirements on Federal agencies to comply with approved State coastal zone management programs.

Section 307(c)(1) requires Federal agencies conducting or supporting activities directly affecting the coastal zone be consistent to the maximum extent practicable with a State's coastal program. NOAA's Federal consistency regulations (15 CFR 930.30-.44) require Federal agencies to review each activity to assess whether it would "directly affect" the coastal zone of a State with an approved CZM program. If the Federal activity would have direct effects, the Federal agency must prepare a consistency determination and submit it to the State. If the Federal activity would have no direct effects, the Federal agency is to make a negative determination.

In States with an approved CMP, Federal agencies are prohibited (Section 307[c] [3][A]) from issuing licenses/permits for any activity in the coastal zone that might affect land or water uses, unless the proposed activity is consistent with the CMP. In cases of inconsistency, the Secretary of Commerce may override the State's objection.

Section 307(c)(3)(B) requires that no Federal license or permit for an activity described in detail in an OCS exploration plan or development and production plan which affects a land or water use in the coastal zone of a State with an approved CMP may be approved until the State has concurred with the consistency determination made by the lessee or the Secretary of Commerce has overridden the State's objections.

Finally, under Section 307(d), Federal agencies may not provide Federal assistance for proposed projects that are inconsistent with a State's coastal management program except upon certain findings by the Secretary of Commerce.

Department of Energy. With respect to Outer Continental Shelf leasing, and in consultation with the Secretary of the Interior, the Department of Energy (DOE) is authorized under the Department of Energy Organization Act of 1977 to foster increased competition for leases, to implement authorized systems of

bidding, to establish due diligence requirements for OCS operations, to set rates of production, and to determine amounts of OCS gas purchased and transported. DOE has broad authority over approval, design, and economics of common carrier gas pipelines.

In addition, the Department of Energy provides support to the Leasing Liaison Committee, whose function is to coordinate leasing policies of the Department of the Interior with DOE policies.

The Federal Energy Regulatory Commission (FERC), within DOE, has the authority under the Natural Gas Act to issue certificates of public convenience and necessity for proposed projects involving the transportation or sale of natural gas in interstate commerce. All natural gas produced from the OCS is considered to be interstate and therefore, is subject to FERC jurisdiction. The Natural Gas Act, the National Environmental Policy Act, and OCS Lands Act Amendments of 1978 all grant authority for or require that the FERC investigate the environmental effects of a proposed offshore project, as well as the potential gas reserves, the need for this gas, and the availability of capital to develop this resource. Also, the FERC is primarily responsible for administering and enforcing the Natural Gas Policy Act (NGPA) of 1978. As applied to OCS matters, the NGPA provides new wellhead pricing controls for certain natural gas produced from the OCS.

Environmental Protection Agency. Under the Federal Water Pollution Control Act (FWPCA) Amendments of 1972, a National Pollution Discharge Elimination System (NPDES) was created and applies to discharges into the territorial seas, waters of the contiguous zone, and the oceans. The NPDES applies to fixed platforms and drillships, and any discharges from these sources would require a permit issued by the Environmental Protection Agency (EPA). Discharges of pollutants without the necessary permits from EPA are unlawful. Such an NPDES permit does not apply to discharge of pollutants from any vessels or floating craft, or subsurface injection wells for production purposes. Subsurface injection is subject to USGS regulations and operating orders.

The Clean Water Act of 1977, which amended the FWPCA, also applies to offshore operations and provides that lessees or operators may be held financially liable for damages due to oil spills. It provides for a liability up to \$50 million for actual costs of oil removal and cleanup as well as replacement or restoration costs of natural resources damaged or destroyed by a spill.

EPA is also primarily responsible for facilities not related to transportation, such as terminal and storage facilities. Permits for any discharges would be issued by EPA or designated States according to established effluent guidelines. Provisions of the Clean Water Act also apply to onshore OCS-related facilities.

Interstate Commerce Commission. The Interstate Commerce Commission grants approval of the tariff rates for transportation of oil by common-carrier pipelines.

c. Intergovernmental Planning Program

Intergovernmental Planning Program. In 1979, the Bureau of Land Management established a new planning and coordination program for OCS leasing and development. The program is designed to provide input into three major BLM OCS program elements: 1) OCS leasing process, 2) OCS environmental studies program, and 3) transportation of OCS hydrocarbons. This program does not replace or affect existing authorities, coordination procedures or responsibilities of the BLM.

The Intergovernmental Planning Program for OCS Leasing, Transportation and Related Facilities (IPP) functions through six regional technical advisory committees of the National OCS Advisory Board. These committees, Regional Technical Working Groups (RTWGs), are comprised of individuals who represent Federal and State interests as well as industry and other special and private interests. The Pacific States Regional Technical Working Group, in which the States of California, Oregon, and Washington are represented, meets approximately four times a year. The members have discussed a number of issues pertaining to existing leases, future leasing activity, transportation of hydrocarbons off the OCS, production and transportation technology for deep water, ongoing and proposed environmental studies for the region. The Pacific RTWG has provided issues for Tract Selection and for the EIS for Proposed Sale No. 68. Once a Sale has been held, the RTWG will address transportation and other post-sale activities in the Sale area.

The Pacific RTWG is currently studying transportation siting considerations in two areas offshore Southern California: the Santa Barbara Channel and offshore San Pedro Bay. Existing geophysical, environmental, and industry infrastructure information has been mapped and described as part of the EIS and transportation efforts. It is anticipated that the RTWG will identify factors critical to pipeline siting and other transportation modes and recommend measures to mitigate possible adverse effects of selected transportation modes in specific areas.

4. Environmental Studies: In 1973, BLM initiated an environmental studies program for the OCS to obtain marine and coastal environmental data relative to offshore resource development impacts. Since FY 1975, the annual Congressional Appropriations Bill for BLM has included funds for BLM's environmental studies program. The 1978 amendments to the OCS Lands Act provided the first legislative mandate for studies in support of OCS minerals development. Section 20 of this act requires the Secretary of the Interior to commence environmental studies at least 6 months prior to a lease sale in a frontier area. The ultimate goal of BLM's OCS environmental studies program is:

..."to establish information needed for prediction, assessment, management of impacts on the human, marine, and coastal environments of the Outer Continental Shelf and the nearshore area which may be affected by oil and gas activities in such area or region."
(43 CFR part 3331.1)

Early in 1978, BLM commissioned an ad hoc advisory committee to evaluate BLM's studies program and to prepare a national study design for future studies. The national study design is a framework to develop studies based on information needs required to answer specific management questions in the OCS leasing and development process. The new national study design was adopted by BLM and the Department of the Interior's OCS Advisory Board in 1978. The result of this program design in the Central and Northern California OCS area is an annual OCS Environmental Studies Plan prepared by BLM's Pacific OCS Office with coordination and review by other Federal and State agencies, local government, industry, and the general public. The California OCS Environmental Studies Plan for Fiscal Years 1982 and 1983 is available from the Pacific OCS Office. Described in the plan are BLM's past environmental studies activity in the area since 1976, ongoing studies, current procurements for FY 1980, planned topics for FY 1981, and proposed BLM study topics for FY 1982 and 1983. Information on current projects and products available from past studies can be obtained from the Studies Staff Chief, Pacific OCS Office.

Table I.B.4-1 briefly lists the status of past and current BLM-funded studies in the Southern California area. BLM is also funding several studies in the Central and Northern California area and in other OCS areas whose results can apply to the Southern California OCS area.

BLM recognizes the information gaps that exist for the Southern California marine and coastal environment, as well as other OCS areas. The purpose of BLM's OCS studies program is to attempt to fill the significant information gaps for making OCS leasing and management decisions within the framework of the Department of Interior's OCS Leasing Schedule. BLM also recognizes that other agencies and organizations are studying the OCS and coastal environment and that the studies program should build on the results of other past and ongoing programs. Answering many questions over a wide range of issues for the dynamic marine and coastal environments is a lengthy and complex process. Some questions can be answered by relatively short-term studies, others only after a long-term effort, and still others may not be answered at all. BLM is planning and carrying out a long-term study effort in the California OCS and coastal area. This study effort is assembling available environmental information which is used at the various OCS leasing and development decision points

TABLE I.B.4-1

PAST, CURRENT AND PROPOSED BLM OCS
STUDIES ACTIVITIES IN SOUTHERN CALIFORNIA

	Study Title	Contract Award Date	Progress Reports	Draft Final Due	Final Report Due
FY 1974	Southern California Literature Study	10/25/73			11/14/74
FY 1975	Southern California Public Meeting	11/15/74			3/12/75
	Southern California Marine Mammal and Seabird Survey, Year I	3/23/75			2/9/79
	Southern California Bight Baseline, Year I	6/30/75			11/78
	Geol. Recon. of Tanner and Cortes Banks	5/75			12/75
FY 1976	Southern California Marine Mammals and Seabirds, Year II	4/1/76	Monthly reports		
	Southern California Bight Intertidal Base- line, Year II	7/1/76			2/9/79
FY 1977	Barium and Vanadium Methodology	2/1/77			11/12/77
	Southern California Bight Air Quality Modeling	4/25/77			2/13/78
	Southern California Bight Archaeological Lit. Survey	5/31/77			11/1/78
	Southern California Marine Mammal and Seabirds, Year III	6/21/77	Monthly reports		

TABLE I.B.4-1 (Cont.)

	Study Title	Contract Award Date	Progress Reports	Draft Final Due	Final Report Due
FY 1977 (Cont.)	Southern California Bight Intertidal Base- line, Year III	7/1/77			9/21/79
	Southern California Bight Benthic and Water Column Baseline, Year II	8/4/77			9/21/79
FY 1978	San Pedro Shelf Sediment Transport	2/10/78			12/79
	Southern California Shelf and Ridge Geophysics and Geo. Hazards	4/10/78			12/79
	Southern California Sale No. 48 Air Quality Assistance	9/22/78			5/4/79
	Tanner and Cortes Banks Reconn. and Characteri- zation	9/1/78			2/80
FY 1979	Formation Water Dispersion Study	7/79			9/80
	Climatology and Oceanographic Analysis of the California Pacific OCS Region	11/1/78			3/81
FY1980	Establishment and Operation of a West Coast OCS Meteorological Buoy Monitoring Network	6/80	Quarterly reports		
	California Seabird Oil Spill Behavior Study	9/29/80	Monthly reports		1/82
	California Commercial and Sports Fish Oil Toxicity Study	9/30/80			8/81
	Offshore Meteorological and Tracer Measurements	7/80			8/81

TABLE I.B.4-1 (Cont.)

	Study Title	Contract Award Date	Progress Reports	Draft Final Due	Final Report Due
FY 1980 (Cont.)	Southern California Air Quality Model Validation Study	8/12/80			8/81
	Proposed Sale No. 68 Air Quality Trajectory Model Study	9/17/80			1/81
	Inventory and Evalua- tion of California Coastal Recreation and Aesthetic Resources	9/10/80			5/81
FY 1981	The Impacts of Proposed OCS Lease Sale No. 68 on Public Services in Santa Barbara and Ventura Counties	1/22/81			4/81
	California Geological Hazards Assessment for OCS Sales 73 and 80	3/81			
	Air Quality Trajectory Model	8/81			
	California Shelf Physical Oceanography Circulation Model	9/81			
FY 1982	Seabird Oil Toxicity Study	9/81			
	Proposed				
	Southern California Marine Mammal and Seabird Risk Analysis				
	California Sea Otter Study				
	Santa Barbara Channel Circulation Model and Field Study				
	Rig Monitoring: Platform Discharge Model and Vali- dation Study				

and also aids in enhancing the prediction and assessment of significant impacts from proposed OCS oil and gas activities.

The Pacific OCS Office is beginning an environmental monitoring program in FY 1982. This program is designed to detect long-term changes in the chemical environment around platforms and the effects of platforms and discharges of muds, cuttings, formation water, and accidental oil spills on marine communities. The program will add to our knowledge of the dynamics of marine systems but is not designed to be specifically predictive of any systems.

5. OCS Operating Orders: OCS Orders are mandatory requirements and specifications for oil and gas exploration and recovery operations that supplement other regulations. Orders outline permit requirements, engineering criteria, surveillance, testing procedures, and information requirements. Pacific OCS Orders are administered by USGS and contain regulations which have been designed to help insure the safety of operations and personnel and to minimize the risk of environmental damage. Conformance with these orders is regularly monitored by USGS personnel. USGS conducts daily inspections (either announced or unannounced) of all exploratory functions and it conducts semi-annual inspections of all platforms in the Pacific OCS region. Pollution surveillance flyovers of platforms, pipeline routes, and exploration operations are made weekly. The staffing size of the inspection program will be proportional to the exploration and development activities. Revisions were made to Pacific OCS Orders Nos. 1, 2, 3, 4, 5, 7, 8 and 12, effective January 1, 1980, and further revisions to 1, 2, 5 and 7 effective September 15, 1980. The following is a brief description of each Pacific OCS Order:

OCS Order No. 1. This order requires identification of the operator, block designation and well number on platforms, structures, wells and mobile drilling units. It requires that the U.S. Coast Guard District Commander determine what aid-to-navigation devices are needed for subsea objects that are hazards to navigation or to the deployment of commercial fishing devices. It requires that equipment of sufficient size or of such a nature that it could be expected to interfere with commercial fishing gear, if dropped overboard, be marked, wherever practicable, with the owner's identification.

OCS Order No. 2. This order details drilling operation rules and permit requirements, including those for mobile drilling units (including fitness and ability to withstand oceanographic and meteorological conditions). It includes criteria relative to inspection of all fixed and mobile drilling units; required hazards report and other surveys as necessary; well design, casing and cementing; blowout-preventer equipment requirements; mud program; supervision, surveillance and training; critical operations and curtailment plans; and for the establishment of field drilling rules.

OCS Order No. 3. This order establishes plugging and abandonment procedures which have general application to all wells drilled for oil and gas. All casings, wellhead equipment, and pilings must be removed to a depth of at least 5 meters (16 feet) below the ocean floor unless another depth is approved by the Geologic Survey District Supervisor.

OCS Order No. 4. This order sets out criteria for demonstrating the capability of a well to produce paying quantities of oil or gas.

OCS Order No. 5. This order contains detailed procedures for the operation of surface production safety systems; subsurface safety devices; additional safety and pollution-control requirements; and crane operations. The Failure and Inventory Reporting System (FIRS) is outlined, as are employee orientation and motivation programs.

OCS Order No. 6. This order sets specifications and testing procedures for completed wells and for multiple or tubingless completions. It relates to production operations only.

OCS Order No. 7. This order requires that the lessee prevent pollution of the ocean, prescribes certain pollution control measures, outlines requirements for Oil Spill Contingency Plans, and prohibits disposal of any waste materials into the ocean that will create conditions which will adversely affect the public health, life, property, aquatic life, wildlife, recreation, navigation, commercial fishing, or other uses of the ocean. Disposal of waste materials is regulated by the Environmental Protection Agency pursuant to the Federal Water Pollution Control Act, as amended.

OCS Order No. 8. This order establishes requirements applicable to platform and structure design and installation. It requires consideration of environmental conditions which may contribute to structure damage. This order applies to production operations. Section I.B.7.h contains additional detail concerning the Structural Verification Program.

OCS Order No. 9. This order for the Pacific Area OCS provides approval procedures for oil and gas pipelines on the OCS. All pipelines and related equipment must be designed and maintained with high-low pressure sensors, automatic shut-in valves, checkflow valves (to control backflow), and metering systems. The Order also requires adequate provisions for cathodic corrosion protection, trawling compatibility, hydrostatic testing, storm scour and other environmental stress in OCS pipelines. Procedures and schedules for regular inspection of pipelines along with recording of such inspections are stipulated.

OCS Order No. 10. This order provides for drilling twin core holes located adjacent to core holes drilled on the OCS under earlier California State authorization. Such holes were drilled prior to the establishment of Federal authority beyond the 3-mile limit.

OCS Order No. 11. This order sets requirements for maximum efficient recovery rate for oil and gas from a lease, and establishes production rates. It also provides procedures to shut-in wells, due to over-production or storms, and for producibility tests. It applies to production only.

OCS Order No. 12. This order sets forth requirements for public inspection of records. It details what information, which the lessee provides to the U.S. Geological Survey, is considered public and how this information should be transmitted to the Survey in order for it to be made publically available.

6. Lease Stipulations: To mitigate potential impacts that have become apparent during environmental analysis, stipulations that have been developed during past Sales are proposed so that those potential impacts can be reduced or eliminated. The following stipulations are proposed, subject to approval by the Secretary of the Interior. In the following, the term DCMOFO refers to the Pacific Area Deputy Conservation Manager, Offshore Field Operation of the Geological Survey and the term Manager refers to the Manager of the Pacific OCS Office of the Bureau of Land Management.

a. Biological Stipulation

(To apply to all leases resulting from this lease sale.)

- (a) If the DCMOFO has reason to believe that biological populations or habitats exist and require protection, he shall give the lessee notice that the lessor is invoking the provisions of this stipulation and the lessee shall comply with the following requirements. Prior to any drilling activity or the construction or placement of any structure for exploration or development on lease areas including, but not limited to, well drilling and pipeline and platform placement, hereinafter referred to as "operation," the lessee shall conduct site specific surveys as approved by the DCMOFO and in accordance with prescribed biological survey requirements to determine the existence of any special biological resource including, but not limited to:
- (1) Very unusual, rare, or uncommon ecosystems or ecotones.
 - (2) A species of limited regional distribution that may be adversely affected by any lease operations.

If the results of such surveys suggest the existence of a special biological resource that may be adversely affected by any lease operation, the lessee shall: (1) relocate the site of such operation so as not to adversely affect the resources identified; (2) establish to the satisfaction of the DCMOFO on the basis of the site specific survey, either that such operation will not have a significant adverse effect upon the resource identified or that a special biological resource does not exist. The DCMOFO will review all data submitted and determine, in writing, whether a special biological resource exists and whether it may be significantly affected by lessee's operations. The lessee may take no action until the DCMOFO has given the lessee written directions on how to proceed.

- (b) The lessee agrees that if any area of biological significance should be discovered during the conduct of any operations on the leased area, he shall report immediately such findings to the DCMOFO and make every reasonable effort to preserve and protect the biological resource from damage until the DCMOFO has given the lessee directions with respect to its protection.

Evaluation of Effectiveness. The biological stipulation was designed to allow leasing activities to occur while providing protection to biological habitats. This stipulation was developed in consultation with the Fish and Wildlife Service, and requires that the lessees conduct environmental surveys when the DCMOFO believes them to be necessary.

Requiring site surveys provides for identification of specific areas which must be avoided in locating bottom-founded equipment and facilities. By imposing the biological stipulation, the unique organisms and habitats in these areas are adequately protected, while allowing the lessee to locate uninhabited areas for the placement of drilling structures which are compatible to the area. Therefore, the adverse impacts identified throughout the pre-lease process for this issue are believed to be adequately mitigated.

b. Cultural Resource Stipulation

(To apply to all leases resulting from this lease sale.)

If the DCMOFO, having reason to believe that a site, structure or object of historical or archaeological significance, hereinafter referred to as a "cultural resource," may exist in the lease area, gives the lessee written notice that the lessor is invoking the provisions of this stipulation, the lessee shall upon receipt of such notice comply with the following requirements.

Prior to any drilling activity or the construction or placement of any structure for exploration or development on the lease, including but not limited to, well drilling and pipeline and platform placement, hereinafter in this stipulation referred to as "operation," the lessee shall conduct remote sensing surveys to determine the potential existence of any cultural resource that may be affected by such operations. All data produced by such remote sensing surveys as well as other pertinent natural and cultural environmental data shall be examined by a qualified marine survey archaeologist to determine if indications are present suggesting the existence of a cultural resource that may be adversely affected by any lease operation. A report of this survey and assessment prepared by the marine survey archaeologist shall be submitted by the lessee to the DCMOFO and the Manager, for review.

If such cultural resource indicators are present the lessee shall: (1) locate the site of such operation so as not to adversely affect the identified location; or (2) establish, to the satisfaction of the DCMOFO, on the basis of further archaeological investigation conducted by a qualified marine survey archaeologist or underwater archaeologist using such survey equipment and techniques as deemed necessary by the DCMOFO, either that such operation shall not adversely affect the location identified or that the potential cultural resource suggested by the occurrence of the indicators does not exist.

A report of this investigation prepared by the marine survey archaeologist or underwater archaeologist shall be submitted to the DCMOFO, and the Manager, for their review. Should the DCMOFO determine that the existence of a cultural resource which may be adversely affected by such operation is sufficiently established to warrant protection, the lessee shall take no action

that may result in an adverse effect on such cultural resource until the DCMOFO has given directions as to its preservation.

The lessee agrees that if any site, structure, or object of historical or archaeological significance should be discovered during the conduct of any operations on the leased area, he shall report immediately such findings to the DCMOFO and make every reasonable effort to preserve and protect the cultural resource from damage until the DCMOFO has given directions as to its preservation.

Evaluation of Effectiveness: BLM has engaged in studies to evaluate the potential of cultural resources in the Southern California OCS area. Proposed Sale No. 68 encompasses 1,112,975 acres of seabed, much of it in very deep waters. The vast area and depths involved make any archaeological search very difficult. For these reasons archaeological investigation on the Pacific OCS is confined to the most sensitive area; i.e., water ≤120 meters deep. The primary method of investigation is remote sensing (magnetometer, sidescan sonar, subbottom profiler). On leases in water ≤120 meters deep, BLM requests that USGS invoke the Cultural Resources Stipulation, which requires a cultural resources survey be conducted in conjunction with the usual geohazards remote sensing survey. The methods by which this stipulation is implemented are specified by a periodically updated Notice to Lessees (NTL). NTL 77-3 is currently in effect.

Based upon water depth and known cultural resource location data, the following tracts are expected to be recommended for invocation of the Cultural Resources Stipulation: 9, 10, 13, 19, 43, 44, 49, 50, 51, 54, 55, 57, 58, 60, 61, 62, 66, 67, 68, 71, 72, 73, 74, 75, 78, 79, 80, 81, 82, 83, 84, 85, 86, 98, 99, 100, 101, 102, 103, 104, 107, 124, 130, 139. However, it is expected, based on past experiences with sales in this region, that most of the above tracts will probably not be leased under this proposal.

If potential cultural resources are identified as a result of the remote sensing survey, BLM will request that USGS require the operator: 1) avoid the object(s), or 2) identify the object(s) through additional investigation (e.g., remote camera, diving archaeologists) as something other than a cultural resource. Based on past experience with cultural resources in this area, BLM expects in most cases the lessee will choose the former alternative, avoidance. Protection of cultural resources by avoidance is considered an appropriate form of mitigation. In addition, the lessee or agent, during any activities on the leasehold, is required to report any findings to the DCMOFO in the event any site or object of historic or archaeological significance should be discovered. The lessee is also required to make every reasonable effort to preserve and protect such site or object from damage until the DCMOFO makes a determination on its preservation. Through the imposition of this stipulation and compliance with applicable Federal and State laws regarding cultural resources, it is believed potential impacts to cultural resources are adequately mitigated.

c. Geological Stipulation

(The Proposed Sale No. 68 tracts identified below by the United States Geological Survey [Burdick and Richmond, in prep.] as potentially hazardous due to mass transport, steep slopes or steep-walled canyons, and/or active faults based on pre-sale high resolution surveys will be subject to the following stipulation. Additionally, lessees are required to conduct site specific geological hazard surveys prior to exploration or development activities on leased blocks to demonstrate to USGS the operational feasibility and safety of the proposed activities. Where surveys indicate the presence of hazardous conditions not previously noted, the USGS has the authority to require the lessees to conduct proposed activities safely; i.e., to acquire mitigating measures comparable to those contained in the following stipulation.)

Mass Movement. Tracts 7, 8, 9, 11, 12, 14, 18, 19, 25, 26, 27, 28, 29, 30, 34, 35, 36, 37, 38, 39, 52, 53, 61, 62, 63, 65, 66, 67, 99, 101, 102, 128, 129, 137, 159, 160, 162, 163, 168, 170, 172, 174, 175, 177, 178, 182, 183, 184, 205, 208 will be subject to the following stipulation:

Exploratory drilling operations, emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas, and the emplacement of pipelines will not be allowed within the potentially unstable portion of this lease block unless or until the lessee has demonstrated to the DCMOFO's satisfaction that mass movement of sediments is unlikely or that exploratory drilling operations, structures (platforms), casing, wellheads and pipelines can be safely designed to protect the environment in case such mass movement occurs at the proposed location. This may necessitate that all exploration for and development of oil or gas be performed from locations outside of the area of unstable sediments, either within or outside of this lease block.

If exploratory drilling operations are allowed, site specific surveys shall be conducted to determine the potential for unstable bottom conditions. Also, an extension of these surveys may be required outside of the leased block. If emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas is allowed, all such unstable areas must be mapped. The DCMOFO may also require soil testing before exploration and production operations are allowed.

Submarine Canyons or Channels. Tracts 6, 9, 13, 21, 44, 45, 56, 60, 65, 66, 67, 99, 101, 102, 105, 133, 142, 170, 176, 183, 189, 190, 192, 193, 208, 209, 220, 221 will be subject to the following stipulation:

Exploratory drilling operations, emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas or emplacement of pipelines will not be allowed within the potentially unstable portions of this lease block unless or until the lessee has demonstrated to the DCMOFO's satisfaction that exploratory drilling operations, structures (platforms), casing, wellheads and pipelines can be safely designed to protect the environment at the proposed location. This may necessitate that all exploration for and development of oil or gas be performed from locations outside of the area of submarine canyons or channels, either within or outside of this lease block.

If exploratory drilling operations are allowed, site specific surveys shall be conducted to determine the potential for unstable bottom conditions. Also, an extension of these surveys may be required outside of the leased block. If emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas are allowed, all such unstable areas must be mapped. The DCMOFO may also require soil testing before exploration and production operations are allowed.

Active Faults. Tracts 59, 65, 66, 67, 68, 73, 82, 83, 84, 85, 86, 99, 123, 147, 160, 163, 168, 170, 171, 173, 199 will be subject to the following stipulation:

Exploratory drilling operations, emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas and the emplacement of pipelines will not be allowed in the vicinity of a fault until the lessee has demonstrated to the DCMOFO's satisfaction that exploratory drilling operations, structures (platforms), casing, wellheads, and pipelines can be safely designed to protect the environment in case fault movement occurs at the proposed location. This may necessitate that all exploration for and development of oil or gas be performed from locations outside of the area of potential fault movement, either within or outside of this lease block.

If exploratory drilling operations are allowed, site specific surveys shall be conducted to determine the potential for active faulting. If emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas are allowed, all fault zones must be mapped. The DCMOFO may also require soil testing before exploration and production operations are allowed.

Evaluation of Effectiveness. The geological stipulations were developed in consultation with USGS. The stipulations require that exploratory drilling operations, emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas, and the placement of pipelines be safely designed to protect the environment in case mass movement, unstable areas associated with submarine canyons or channels, or fault movement occur either within or outside of the particular lease block. Mapping is required if emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas are allowed in all such unstable areas. Consequently, it is believed that all potential geological hazards are adequately mitigated.

d. Military Stipulation No. 1

(This stipulation will apply to tracts determined through consultation with the Department of Defense to conflict with military operating areas. See Section VII.A.1).

- (a) The lessee agrees that prior to operating or causing to be operated on its behalf boat or aircraft traffic into individual, designated warning areas, the lessee shall coordinate and comply with instructions from the Commander, Western Space and Missile Center (WSMC), the Commander, Pacific Missile Test Center (PMTTC), and Commander, Fleet Area Control and Surveillance Facility (FACSFAC), or other appropriate military agency. Such coordination and instruction will

provide for positive control of boats and aircraft operating in the warning areas at all times.

- (b) The lessee, recognizing that mineral exploration and exploitation and recovery operations of the leased areas of submerged lands can impede tactical military operations, hereby recognizes and agrees that the United States reserves and has the right to temporarily suspend operations of the lessee under this lease in the interests of national security requirements. Such temporary suspension of operations, including the evacuation of personnel, and appropriate sheltering of personnel not evacuated (an appropriate shelter shall mean the protection of all lessee personnel for the entire duration of any Department of Defense activity from flying or falling objects or substances), will come into effect upon the order of the DCMOFO after consultation with the Commander, Western Space and Missile Center (WSMC), the Commander, Pacific Missile Test Center (PMTTC), and the Commander, Fleet Area Control and Surveillance Facility (FACSFAC), or other appropriate military agency, or higher authority, when national security interests necessitate such action. It is understood that any temporary suspension of operations for national security may not exceed seventy-two hours; however, any such suspension may be extended by order of the DCMOFO. During such periods equipment may remain in place.
- (c) The lessee agrees to control his own electromagnetic emissions and those of his agents, employees, invitees, independent contractors or subcontractors emanating from individual, designated defense warning areas in accordance with requirements specified by the Commander, Western Space and Missile Center (WSMC), the Commander, Pacific Missile Test Center (PMTTC), and the Commander, Fleet Area Control and Surveillance Facility (FACSFAC), or other appropriate military agency, to the degree necessary to prevent damage to, or unacceptable interference with, Department of Defense flight, testing or operations activities conducted within individual, designated warning areas. Necessary monitoring, control, and coordination with the lessee, his agents, employees, invitees, independent contractors or subcontractors, will be effected by the Commander of the appropriate onshore military installation conducting operations in the particular warning area: provided, however, that control of such electromagnetic emissions shall permit at least one continuous channel of communication between a lessee, its agents, employees, invitees, independent contractors or subcontractors and onshore facilities.

e. Military Stipulation No. 2

(To apply to all leases resulting from this lease sale.)

In order to indemnify and save harmless the United States, this stipulation will apply to all leases resulting from this sale.

Whether or not compensation for such damage or injury might be due under a theory of strict or absolute liability or otherwise, the lessee assumes all risks of damage or injury to persons or property, which occurs in, on, or

above the Outer Continental Shelf, to any person or persons or to any property of any person or persons who are agents, employees or invitees of the lessee, its agents, independent contractors or subcontractors doing business with the lessee in connection with any activities being performed by the lessee in, on, or above the Outer Continental Shelf, if such injury or damage to such person or property occurs by reason of the activities of any agency of the U.S. Government, its contractors, or subcontractors, or any of their officers, agents or employees, being conducted as a part of, or in connection with, the programs and activities of the Western Space and Missile Center (WSMC), the Pacific Missile Test Center (PMTC), or other appropriate military agency.

Notwithstanding any limitations of the lessee's liability in section 14 of the lease, the lessee assumes the risk whether such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of their officers, agents, or employees. The lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury sustained by the lessee, and to indemnify and save harmless the United States against all claims for loss, damage, or injury sustained by agents, employees, or invitees of the lessee, its agents or any independent contractors or subcontractors doing business with the lessee in connection with the programs and activities of the aforementioned military installations and agencies, whether the same be caused in whole or in part by the negligence or fault of the United States, its contractors, or subcontractors, or any of their officers, agents, or employees and whether such claims might be sustained under theories of strict or absolute liability or otherwise.

Evaluation of Effectiveness. The two military stipulations were developed in consultation with the Department of Defense. These stipulations relating to electromagnetic interference, shelter/evacuation, and holding harmless would be included in Proposed Sale No. 68 leases as they have been in previous OCS sales. It is believed that these stipulations adequately mitigate any potential Department of Defense conflicts in tracts to which they are applied.

f. Transportation of Hydrocarbon Products Stipulation

(To apply to all leases resulting from this lease sale.)

- (a) Pipelines will be required: (1) if pipeline rights-of-way can be determined and obtained; (2) if laying of such pipelines is technologically feasible and environmentally preferable; and (3) if, in the opinion of the lessor, pipelines can be laid without net social loss, taking into account any incremental costs of pipelines over alternative methods of transportation and any incremental benefits in the form of increased environmental protection or reduced multiple use conflicts. The lessor specifically reserves the right to require that any pipeline used for transporting production to shore be placed in certain designated management areas. In selecting the means of transportation, consideration will be given to any recommendation of the intergovernmental planning program for assessment and management of transportation of Outer Continental Shelf oil and gas with the participation of Federal, State, and local governments and the industry.

- (b) Following the development of sufficient pipeline capacity, no crude oil production will be transported by surface vessel from offshore productions sites, except in the case of emergency. Determinations as to emergency conditions and appropriate responses to these conditions will be made by the DCMOFO.
- (c) Where the three criteria set forth in the first sentence of this stipulation are not met and surface transportation must be employed, all vessels used for carrying hydrocarbons to shore from the leased area will conform with all standards established for such vessels, pursuant to the Port and Tanker Safety Act of 1978 (PL 95-474).

Evaluation of Effectiveness. The intent of this measure is to transport hydrocarbons by the safest and environmentally preferable method. The measure has been standard for recent Pacific OCS Sales.

g. Wells and Pipeline Stipulation

(To apply to all leases resulting from this lease sale.)

- (a) Wells. Subsea well heads and temporary abandonments, or suspended operations that leave protrusions above the sea floor, shall be protected, if feasible, in such a manner as to allow commercial trawl gear to pass over the structure without snagging or otherwise damaging the structure or the fishing gear. Latitude and longitude coordinates of these structures, along with water depths, shall be submitted to the DCMOFO. The coordinates of such structures will be determined by the lessee utilizing state-of-the-art navigation systems with accuracy of at least +50 feet (15.25 meters) at 200 miles (322 kilometers).
- (b) Pipelines. All pipelines, unless buried, including gathering lines, shall have a smooth-surface design. In the event that an irregular pipe surface is unavoidable due to the need for valves, anodes or other structures, those irregular surfaces shall be protected in such a manner as to allow trawl gear to pass over the object without snagging or otherwise damaging the structure or the fishing gear.

Evaluation of Effectiveness. Existing regulations require temporary abandonments to be marked by aids to navigation as directed by the U.S. Coast Guard. Although this helps fishermen to avoid these structures, there still is a significant potential for fishing nets to become entangled on these structures. This potential for conflict could cause economic losses to the commercial fishing industry through net damage and loss or through preclusion of fishing in areas where wells are temporarily abandoned. This stipulation would require that these structures be protected, if feasible, so commercial trawl gear can pass over the structure. Thus, fishermen would not be precluded from fishing in areas where wells are temporarily abandoned and would not sustain net damage and loss. In situations where it is feasible to protect temporary abandonments, this stipulation is expected to adequately mitigate these impacts.

Existing regulations require that pipelines be compatible with commercial fishing gear. This means that fishermen must be able to fish over the pipeline without damaging the fishing net or the pipeline. This stipulation provides

details on how this compatibility needs to be accomplished when pipelines are not buried. Pipelines need to have a smooth-surface design, but if an irregular pipe surface is unavoidable, the irregular surfaces need to be protected so trawl gear can pass over the object without snagging or otherwise damaging the structure or the fishing gear. This stipulation is expected to adequately mitigate impacts of trawl gear on pipelines and impacts of pipelines on trawl gear.

7. Other Mitigating Actions

a. Contingency Plans: To implement the Clean Water Act, as amended, the President's Council on Environmental Quality developed the National Oil and Hazardous Substances Pollution Contingency Plan following specific legislative directions to include: 1) the duties and responsibilities of each Federal agency in coordination with State and local agencies; 2) a strike force of trained personnel available to provide the earliest possible notice of a discharge; 3) a system of surveillance to provide the earliest possible notice of a discharge; 4) a national center to coordinate the plan; and 5) procedures and techniques for identifying, containing, and removing the discharge or dispersing it, if necessary.

The Environmental Protection Agency and the Coast Guard are the enforcing agencies for the Clean Water Act. These agencies have the authority and the capacity to marshal the nation's capability to combat an oil spill.

As a standard part of any OCS lease, OCS Order No. 7 requires oil spill equipment to be at the site of any drilling or development operations and also requires all of the requirements listed above to be met, including a detailed site specific oil spill contingency plan. In addition, along the California Coast there are several existing oil spill cooperatives (Clean Bay in San Francisco Bay, Clean Seas at Santa Barbara, Southern California Petroleum Contingency Organization at Long Beach and Clean Coastal Water at Long Beach) along with the USCG Pacific Strike Force located in San Francisco. For additional detail, see Section IV.A.1.b.

b. Oil Spill Fund: Title III of the OCS Lands Act, as amended, establishes in the U.S. Treasury an Offshore Oil Pollution Compensation Fund to be administered by the Secretary of Transportation. This fund provides compensation for any person suffering direct or actual injury caused by the discharge of oil from an offshore facility or vessel. A fee of not more than 3¢ per barrel of oil produced on the OCS provides the monies for the fund. The fees collected may be modified or increased to maintain the fund at a level between \$100 and \$200 million.

Claims for economic loss that arise out of, or directly resulting from, oil pollution may generally be asserted against the fund by any claimant for damages and removal costs. A U.S. claimant (who owns or leases property so damaged or who utilizes a natural resource involved) may file for injury to or destruction of real or personal property, loss of use of real or personal property, and loss of use of natural resources. The President may assess claims for injury to or destruction of natural resources over which the Federal Government exercises sovereign rights or exclusive management authority, as may a State for natural resources owned or managed by the State. Lost profits or impaired earning capacity may be claimed by a United States claimant who derives at least 25 percent of his earnings from activities using property or natural resources affected by oil pollution. Federal, State, and local governments may also assert claims for tax revenue lost due to injury to real or personal property.

Owners and operators of offshore facilities are held strictly liable for all loss attributable to oil pollution from their facilities. Except in cases of gross negligence, willful misconduct, or violation of safety regulations, vessel liability is limited to \$250,000 or \$300 per gross ton, whichever is greater. For an offshore facility, liability is limited to the total cleanup and removal costs, and \$35 million in damages. Evidence of financial responsibility adequate to satisfy the maximum amount of liability must be provided.

Upon payment of compensation for economic loss compensable under Title III, the fund becomes subrogated to all rights, claims, and causes of action of the claimant.

c. Fishermen's Contingency Fund: Title IV of the OCS Lands Act, as amended, establishes a Fishermen's Contingency Fund in the U.S. Treasury. The purpose of this fund is to compensate U.S. commercial fishermen (including operators of commercial passenger fishing vessels) for damages caused by materials, equipment, tools, containers, or other items associated with oil and gas exploration, development, and production when no financially responsible party can be identified. Damages covered by the fund include: 1) loss of profits for the owner, operator, and crew; 2) damage to, or loss of fishing gear and vessels; 3) fuel costs; and 4) reasonable attorneys' fees (unless the claim is denied).

A claim is presumed to be caused by items associated with OCS oil and gas exploration, development, or production activities if it is filed orally or in writing within five (5) days after the date when the damage or loss is discovered, and provides the preliminary information required by the regulations. A more detailed report must then be filed no later than sixty (60) days after the date the damage or loss is discovered. However: 1) the damage must have occurred in an area affected by OCS oil and gas exploration, development, or production activities as defined in the regulations; 2) the amount of the award will be reduced to the extent that the damage was caused by the negligence or fault of the commercial fishermen making the claim; 3) the claim will be reduced by the amount of compensation recoverable from insurance; 4) the damage or loss cannot be known to be caused by a natural obstruction or an obstruction unrelated to OCS oil and gas exploration, development, or production activities; 5) there must not be a record on the most recent nautical charts issued by the National Ocean Survey, NOAA, or in any weekly Notice to Mariners issued by the Defense Mapping Agency Hydrographic/Topographic Center on or before the date of the damage that an obstruction existed in the immediate vicinity where the damage or loss occurred; 6) there must not be a proper surface marker or lighted buoy attached, or closely anchored to the obstruction. When damage occurs within a one-quarter mile radius of obstructions recorded on charts or in a Notice to Mariners, or are properly marked, it is presumed to involve the recorded obstruction and negligence or fault of the claimant is presumed unless the claimant can prove otherwise.

If a commercial fisherman does not file a claim within five (5) days, he may still receive compensation. However, the claim must be filed within 60 days after the date when the damage or loss is discovered and the claimant has the burden of proof to establish: 1) the identity or nature of the item which caused the damage; and 2) that the item which caused the damage is associated

with oil and gas exploration, development, or production activities on the Outer Continental Shelf.

The Fund is divided into area accounts. California is included in the Pacific area account. Each area account cannot exceed \$100,000, but, if depleted, it will be replenished. The total amount in the fund, at one time, cannot exceed \$1 million. Money for each area comes from holders of leases, exploration permits, easements, or right-of-ways for the construction of pipelines. The Secretary of Commerce specifies the amount to be paid but it may not exceed \$5,000 per lease, permit, easement or right-of-way in any calendar year; the Secretary of the Interior collects the money. Final regulations developed by the National Marine Fisheries Service for implementing the Fishermen's Contingency Fund are described in 50 CFR Part 296.

Furthermore, to comply with the OCS Lands Act, as amended, National Ocean Survey (U.S Department of Commerce) is conducting a survey of natural and man-made obstructions on the OCS that pose potential hazards to commercial fishing or fishing gear. Charts identifying these hazards will be developed for commercial fishermen. Initially, this survey shall concentrate on areas where OCS oil and gas production has or will soon commence.

d. Oil Spill Prevention and Mitigation: The prevention and mitigation of oil spills has historically been a prime consideration in OCS resource management. Prevention and mitigation measures are identified and required by the OCS Orders implemented by the U.S. Geological Survey as a standard part of any OCS lease sale. OCS Orders Nos. 2, 5, 7, and 8 specifically provide for the mitigation of oil spills through provisions for safety systems, pollution control equipment, personnel training and platform integrity verifications. These are reflected in that, industry has drilled over 16,000 offshore wells since 1956 with an impressive safety record. Last year, only two oil spills of more than 50 bbl occurred within U.S. OCS waters, with the larger one involving 135 bbl of oil.

e. Oil Spill Modeling: An oil spill risk analysis model has been developed and utilized which quantitatively determines the likelihood of oil spill impact on particular areas and/or resource categories. The model results are discussed in Section IV.A.1. POCS Technical Paper No. 81-2 (Cooke, 1981) provides discussion of the oil spill risk analysis.

f. Prevention of Groundwater Contamination: The isolation of freshwater strata from potential contaminants in a borehole is insured by well casing, cementing and plugging regulations set forth in the Code of Federal Regulations (30 CFR Part 250.41) and OCS Orders Nos. 2 and 3. These regulations set forth the procedures to be undertaken during drilling and abandonment of OCS wells in order to ensure the isolation of oil, gas, and freshwater zones in the strata in which they are found, and prevent them from escaping into other strata or to the surface.

These measures should effectively maintain the purity of any freshwater aquifers which might be drilled through during OCS exploration and development activities.

The occurrence and offshore distribution of freshwater aquifers has been discussed in detail in "Oil and Gas Development in the Santa Barbara Channel Outer Continental Shelf Off California" by the USGS (1976), pages II-60 through II-70.

g. Exploration and Development Plans: The OCS Lands Act Amendments of 1978 placed additional requirements on lessees relative to Exploration and Development Plans. This section will note particular aspects of these Plans as they relate to exploration and development activities in the Proposed Sale No. 68 area.

The holder of an OCS oil and gas lease is required to submit an exploration plan and accompanying environmental report before exploratory drilling can begin. The plan and report is submitted for approval to the Pacific Region USGS office. Federal agencies (BLM, USFWS, NMFS, NPS, and USCG) and State agencies (CCC, CDFG, CARB, CDOG, CSLC) review and make recommendations to the USGS on all exploration plans. In addition, any affected local governments or any interested person may submit comments and recommendations. The CCC determines whether the proposed activities are consistent with the State's coastal zone management program.

The USGS uses the review comments of the other agencies in the preparation of an Environmental Assessment (EA). The proposed plan will be approved if the EA shows that the plan will not result in significant effects on the quality of the human environment. This approval results in a Finding of No Significant Impact (FONSI). If it is determined that approval of the plan would constitute a major Federal action (i.e., proposed oil and gas exploration functions) that would significantly affect the quality of the human environment, an EIS must be prepared. On the basis of the EA, EIS findings, and the technical review by USGS, the exploration plan will be approved, rejected, or modified.

The following sections describe the contents of the exploration plans and environmental reports.

Exploration Plan. Each exploration plan must include, but is not limited to: 1) The proposed type and sequence of exploration activities; 2) a description of drilling vessels, platforms, and other structures to be attached to the seabed, including safety and pollution prevention and control features; 3) a geophysical survey report; 4) the approximate location of each proposed well, including surface and projected bottom hole locations; 5) an Oil Spill Contingency Plan that describes the procedures, personnel, and equipment that are to be used for preventing, reporting, and clean up of oil spills on waste material; and 6) other relevant geological and geophysical information.

Environmental Report. The ER includes, but is not limited to: 1) a detailed description of onshore support and storage facilities; 2) the estimated number of people expected to be employed; 3) boat and aircraft patterns; 4) the quantity and composition of wastes and pollutants; 5) major supplies, services, and resources needed for implementation of the plan; 6) potentially hazardous or environmentally sensitive areas, including archaeological and cultural sites; and 7) a statement of coastal zone consistency. An assessment is also

made of the direct effects of plan implementation on onshore and offshore environments.

A plan is also required prior to development and production on any lease within the Pacific OCS region. As with proposed exploratory operations, an Environmental Report is necessary. The development plans and associated ER are usually much more comprehensive than those for exploration.

Development plans for platforms are submitted to USGS for approval. However, both USGS and BLM issue permits for offshore pipelines. USGS issues permits for OCS pipelines which are wholly contained within the boundaries of a single lease, the boundaries of unitized leases, or the boundaries of contiguous (not cornering) leases of the same owner or operator. BLM issues rights-of-way for OCS pipelines which are not wholly contained within these previously described limits.

USGS or BLM prepares an EA after receiving review comments and recommendation from State and Federal agencies. If State and Federal agencies jointly prepare the assessment, the resulting document is referred to as an environmental impact report/environmental-assessment (EIR/EA). The state CCC also prepares a consistency determination. As with exploratory plans, USGS will either issue a FONSI (approval) or a FOSI (finding of significant impact). If a FOSI is found, and it has not already been addressed in an EIS, an EIS must be prepared. On the basis of the EA, EIS findings, and the USGS technical review, the development/production plan will be approved, rejected, or modified.

The Secretary of the Interior is required to find at least once that a development and production plan in a frontier area is a major Federal action. As such, preparation of an environmental impact statement is required, including all the attendant procedures of the National Environmental Policy Act of 1969. Development and production plans must allow 60 days for comments and recommendations from the Governor and/or the Executives of any affected local governments. In addition, any interested person may submit comments and recommendations.

h. Structural Verification Program: OCS Order No. 8, Platforms and Structures, established by USGS, is designed to assure that offshore oil and gas structures are designed, constructed and installed using standardized procedures to prevent structural failures. Lessees are required to submit detailed information on any proposed structure to be erected. The program facilitates review of these structures. The program utilizes third party expertise and technical input in the verification process through the use of a Certified Verification Agent.

One consideration particularly important to the California OCS will be meeting structural design criteria for seismic events. Design is performed for two levels of a seismic incident - an operational level and a safety level. At the safety level, damage to and deformation of the structure is allowable, but the strength must be adequate to prevent collapse.

Determination of the acceleration forces to which the structure may be subjected is made by calculating the magnitude of the maximum probable and maximum

credible earthquake likely to be generated by faults in the vicinity of the structure.

Bedrock acceleration at the site of the structure is related to the magnitude of an earthquake and its distance from the location. Bedrock acceleration is affected by the character of the overlying soils. In most instances, the overlying soils tend to reduce the forces of acceleration applied to the structure but in rare cases can amplify it. Once the seismic forces to which a structure may be subjected have been established, the structure is designed to withstand those forces.

Seismic activity has less of an effect on pipelines that are free to move. An unconfined pipeline has sufficient flexibility and elasticity that nominal seismic movement may have little effect on the integrity of the pipeline. However, if the pipeline is buried, the inherent flexibility and elasticity of the pipeline may be reduced to a point that damage is incurred.

Pipelines that cross potentially active faults that reach the surface require special consideration. Geophysical examination of the shallow portion of a fault trace may provide information on the date of the latest movement of the fault. In the absence of proof of recent activity at the tract of a fault, potential damage to the pipeline may be eliminated or minimized by crossing the fault tract in such a manner that the flexibility and elasticity of the pipeline are maximized.

i. Notices to Lessees and Operators: These notices have the same effect or status as OCS Orders and Regulations and are used when expeditious clarifications, corrections, or additions to the orders and regulations are necessary.

The following NTL's are now in effect:

<u>NTL No.</u>	<u>Effective Date</u>	<u>Title</u>
77-1	March 1, 1977	Applications for Exploratory Operations OCS California, South of Point Conception
77-3	March 1, 1977	Minimum Cultural Survey Requirements OCS Exploratory Drilling
78-1	October 23, 1978	Minimum Requirements for Biological Surveys
78-2	October 23, 1978	Group Billing Procedures for Meals and Lodgings
79-1	June 22, 1979	Amends NTL 78-2
80-1	February 13, 1980	Furnishing Food, Quarters, and Transportation to USGS Personnel
80-2	March 20, 1980	Minimum Requirements for Environmental Reports
80-3	July 7, 1980	Reorganization Announcement
80-1	January 22, 1981	Failure and Inventory Reporting System (FIRS) Reporting Information
81-2	July 6, 1981	Geological Hazard Survey Requirements for OCS Exploratory Drilling

The purpose of these notices is to keep lessees and operators informed as to what the USGS requires prior to approving proposals to conduct exploratory drilling operations. The text of Notices to Lessees and Operators which are currently in effect for the Pacific OCS area are on file with U.S. Geological Survey, Conservation Division, Los Angeles, California.

j. Aircraft Overflight Restrictions: Aircraft are presently restricted by existing State and Federal regulations from flying at altitudes below 1,000 feet near important pinniped and seabird terrestrial habitats on the Channel Islands, Ano Nuevo and Farallon Islands. Additionally, potential lessees will be notified in the proposed notice of sale by the Instructions to Lessees to avoid flying at altitudes less than 1,000 feet near all seabird nesting and pinniped rookery areas of Southern California. The existing restrictions should protect the majority of California seabird and marine mammals from aerial harassment. The additional restrictions will provide additional protection to marine mammals and seabirds.

8. Interrelationship of Proposal with Other Projects and Proposals

a. Coastal Zone Management: The California Coastal Management Program (CMP), developed according to the provisions of the Coastal Zone Management Act, was approved by the Secretary of Commerce in 1978. The Program provides policies and regulatory authorities to ensure long-range conservation, utilization, and orderly development of California's coastal resources. The California CMP is comprised of two segments: The Management Program for San Francisco Bay (1977) which provides for resource management by the Bay Conservation and Development Commission (BCDC); and the California Coastal Act (1976) which, in addition to setting forth land use policies for the coastal zone, formally establishes the California Coastal Commission as the oversight body in coastal resource management for California. As noted in Section I.B.3.b above, any action that directly affects the coastal zone must be consistent, to the maximum extent practicable, with the California Coastal Management Plan. The BCDC and the California Coastal Commission review and concur with the determination on such actions.

The policies of the Coastal Act and resulting California Coastal Management Program address the following areas of concern: public access, recreation, marine environment, land resources (including environmentally sensitive habitats and agriculture), residential development, energy facilities siting, and industrial development. The primary vehicle for implementing the CMP is the local coastal program (LCP). Each of 67 jurisdictions, those wholly or partially within the coastal zone as defined by the California Coastal Commission, must have an LCP approved and certified by the Commission before it can assume the permitting authority presently held by the Commission. Each LCP is comprised of two parts: a land use plan and zoning ordinances necessary to implement that plan. The two phases may be certified and approved separately, though permitting authority is contingent upon the adequacy of the entire LCP.

As of July 1, 1981, 15 complete LCPs and all four port master plans required by the Coastal Act had been certified. Of these, the cities of Trinidad and Long Beach, the county of San Mateo, and the Ports of Hueneme, Los Angeles, and Long Beach have assumed permit issuing responsibilities. Sixteen jurisdictions have completed the Land Use Plan portion of their LCPs. The others are in various stages of completion with many close to completion and acceptance.

The LCPs address issues of major concern within the individual jurisdictions. Several local jurisdictions along the Southern California Bight have noted that sensitive ecological habitats, wetlands, commercial/recreational boatings and coastal marine resources are major issues. A few have noted concern regarding limitations on public works facilities. One, Ventura County, specifically addresses energy facility sitings. A number of other issues are of concern to the local jurisdictions (access, visitor-serving uses, etc.), but are not of immediate concern with respect to potential effects from OCS development. None of the approved LCPs which address the above concerns are directly affected by the proposal. Should concern arise with respect to these issues, the LCPs may incorporate (or, in the case of approved LCPs, be amended to include) policies, etc., to ameliorate potential impacts.

As required by the Coastal Zone Mangement Act, each State's management program must include a planning process for energy facilities likely to be located in, or which may significantly affect, the coastal zone, including, but not limited to, a process for anticipating and managing the impacts from such facilities (Section 305(b)(8)).

Article 7 of California's Coastal Act deals with Industrial Development Planning and Management policies. Sections 30260-30263 of the California Public Resources Code address coastal-dependent industrial facility siting and policies relating specifically to oil and gas development. The energy facility planning process is developed and implemented through the LCP process. The local jurisdictions identify possible energy facility issues to be addressed in their LCPs. This involves consultation and coordination with energy suppliers that may be interested in locating within the jurisdiction.

In general, consolidation of energy and industrial facilities is encouraged by the State, except in situations where it is beneficial to choose new areas for this use.

b. Marine Sanctuaries, and Oil and Gas Sanctuaries: Under the Marine Protection, Research, and Sanctuary Act of 1972 (16 U.S.C. 1431-1434), the Secretary of Commerce, with the approval of the President, is empowered to designate areas as Federal marine sanctuaries for the purpose of preserving or restoring such areas for their conservation, recreation, ecological, or esthetic values, following consultation with the Secretaries of State, Defense, Interior, and Transportation, with the Administrator of EPA, and with other interested agencies. Once an area is designated a marine sanctuary, the National Oceanic and Atmospheric Administration Office of Coastal Zone Management is required to issue "necessary and reasonable regulations" for control of activities permitted within the marine sanctuary. Multiple uses, including oil and gas development could be permitted within a marine sanctuary, providing these uses comply with the regulations governing the sanctuary.

The Channel Islands National Marine Sanctuary is the only established marine sanctuary within the Proposed Sale No. 68 area. NOAA has suspended oil and gas regulations which prohibit leasing pending further analysis. The objectives of the marine sanctuary are to preserve a unique and strategically located ecosystem (intertidal, subtidal benthos, pinnipeds, seabirds, recreation, and cultural resources), to encourage scientific research, and to enhance public awareness of the sanctuary resources. The boundaries of this sanctuary are defined as the ocean area from the mean high tide line to a distance of 6 nm around San Miguel, Santa Rosa, Santa Cruz, Anacapa and Santa Barbara Islands. The islands themselves are not part of the sanctuary. The California Department of Fish and Game and the National Marine Fisheries Service are responsible for the regulation of fishing within the sanctuary boundaries.

The State of California has established three oil and gas sanctuaries in the region extending out to the 3-mile limit of the State's jurisdiction. These areas are specifically excluded from oil and gas leasing pursuant to the State of California Public Resources Code, Sections 6871.1, 6871.2(a), 6871.2(b).

Administered by the State Lands Commission, these sanctuaries were established to give the State the authority to regulate oil and gas development in State waters, but do not contain any restrictions on the placement of pipelines from the OCS. For location of these sanctuaries, see Maxi Visual, Volume II.

c. Channel Islands National Park: On March 5, 1980, through Public Law 96-199 per 16 U.S. Code 410, Santa Barbara, Anacapa, most of Santa Cruz, Santa Rosa, Prince, and San Miguel Islands, including the rocks, islets, submerged lands, and waters within 1 nautical mile (nm) of each island became a National Park. The submerged lands out to 3 miles are sovereign lands of the State. California Fish and Game maintains control over the fishing regulations and principal regulations of the subtidal biological resources through a cooperative program with the National Park Service. Close cooperation with National Marine Fisheries Service in the Channel Islands National Marine Sanctuary is also required.

The purpose of the park is to protect the nationally significant natural, scenic, wildlife, marine, ecological, archaeological, cultural, and scientific values of the Channel Islands in the State of California, including, but not limited to, the following:

- (1) The brown pelican nesting area;
- (2) The undisturbed tide pools providing species diversity unique to the eastern Pacific coast;
- (3) The pinnipeds which breed and pup almost exclusively on the Channel Islands, including the only breeding colony for northern fur seals south of Alaska;
- (4) The Eolian landforms and caliche;
- (5) The presumed burial place of Juan Rodriques Cabrillo; and
- (6) The archaeological evidence of substantial populations of Native Americans.

d. Sewage Outfalls: Over one billion gallons of effluents per day are discharged from 28 sewage outfalls in the Southern California Bight. This continues to contribute a significant amount of pollutants to the Southern California Bight. Fay (1972) and Littler (1979) have both noted significant impacts from municipal sewage discharges in the Bight. For a discussion of this topic, see Section III.A.3.

e. Other: In addition to Proposed Sale No. 68, numerous other proposals and public and private projects will be ongoing at the same time in the Southern California coastal area. A description of these projects and proposals and the development assumptions are included in Section III.C.2 (Coastal Economy). These projects and proposals also provide the basis for the cumulative impact analysis of Section IV, Environmental Consequences of the Proposed Sale.

Some of these projects, as requested by the County of Santa Barbara, are outlined as follows: The local conformity to the State Implementation Plan (SIP) for clean air is covered in POCS Technical Paper No. 81-7 (Environmental Resources Group, 1981). The Local Coastal Programs (LCP), in some cases, address energy-related accidents in relation to small local areas. No

amendments are expected as the result of Proposed Sale No. 68. The Coastal Energy Impact Program (CEIP) involves Federal funds designed to assist local governments to predict oil development impacts on a local level funded through 1982 and is not anticipated to continue from thereon.

The National Maritime Research Center (NMRC) has, under contract to CCC, produced a study in which ships passing through areas under various oil platform placement configurations is simulated. The Coast Guard's Vessel Traffic Separation Scheme (VTSS) was a port access route study designed for safe ship traffic. The Santa Barbara Risk Management Study has been completed and recommendations have been made to the CCC. The Coastal Commission Oil Spill Study has been finished through Phase I. It studied the capability of existing oil spill equipment of Clean Seas of Southern California. Phase II of the study, in which the other four California coops are evaluated, is expected in December. Tentative date for completion of the final study (Phases I and II) is January, 1982.

CHAPTER II

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section analyzes seven alternative actions, including the total Sale offering as Alternative 1. Other alternatives are: 2) modify the Sale by deleting tracts in the Channel Islands National Marine Sanctuary, 3) modify the Sale by deleting tracts in the adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone), 4) modify the Sale by deleting tracts adjacent to Santa Monica Bay, 5) modify the Sale by deleting tract 165 in the precautionary area of Los Angeles/Long Beach Harbors, 6) cancel the Sale, and 7) delay the Sale. In addition, the Secretary could combine various alternatives to the proposed action (see "other alternatives").

A. Resource Estimates and Activities Estimated to Result from the Proposed Sale

Resource estimates and activities estimated to result from the proposed Sale are discussed in detail in Section I.B.1. The following 2 paragraphs briefly summarize that information.

Two hundred eighteen (218) tracts with a total area of about 450,415 hectares (1,112,975 acres) are being considered. The tracts are divided into 3 sub-areas: the Santa Barbara Channel, the Inner Banks and Basins and the Outer Banks and Basins. Estimated economically recoverable oil and gas resources (conditional mean), for each subarea are as follows: Santa Barbara Channel, 67 million bbl of oil, 133 billion cubic feet of gas; Inner Banks, 70 million bbl of oil, 93 billion cubic feet of gas; and Outer Banks, 93 million bbl of oil, 436 billion cubic feet of gas. The risked mean values are less (see Table I.B.1.b-1). Production is estimated to start in 1987 and continue into 2006, peaking during 1989 to 1993. All oil produced is assumed to back out an approximately equal amount of either foreign imports or Alaskan oil to California over the life of the project. Transportation of the oil and gas is expected to be as follows: Santa Barbara Channel and the Inner Banks - oil and gas will be processed offshore and piped to shore; Outer Banks oil will be barged to Los Angeles-Long Beach and gas will be reinjected. Actual refining of all the oil is expected to occur in Los Angeles Basin refineries.

Tables I.B.1.d-1 through 4 provide detail on the expected number of exploratory and development wells, production platforms, subsea completions, miles of pipelines, pipeline burial sediment, drill mud and cuttings, formation water, sewage, and estimates of direct employment and investment. The mean number of permanent platforms for each of the subareas is: Santa Barbara Channel, 2; Inner Banks, 2; and Outer Banks, 4. For all areas, a total of 96 miles of offshore pipeline is expected. Investments for each of the areas, based on the conditional mean resource estimates, are: \$761 million, \$518 million and \$859 million. Total, direct resident labor employment estimates, for each of the three subareas (assuming conditional mean resource estimates) range from 55 to a maximum of 406. For 15 of the 25 years of project life, total direct resident labor employment is projected to be only 80 individuals.

B. Analysis of Proposal and Alternatives

1. Alternative 1 - Hold the Sale as Proposed

a. Description of the Alternative: The description of the proposal is summarized in Section II.A and is detailed in Sections I.B.1 through 8.

b. Mitigating Measures: For a detailed discussion of the mitigating measures, refer to Sections I.B.2.g and m, and I.B.5 through 7. Mitigating measures can be divided into four headings: 1) endangered species protection/consultation, 2) OCS Operating Orders, 3) Lease Stipulations, and 4) other mitigating measures.

Endangered species which could be affected by the proposal have been identified. Formal consultation with the FWS and NMFS indicates that none of these species will be jeopardized by leasing and exploration. Consultation will be conducted, as needed, for development activities.

There are 12 OCS Orders applicable to the Pacific Region which are mandatory requirements and specifications for oil and gas operations. They supplement other regulations. The Orders outline permit requirements, engineering criteria, surveillance, testing procedures, and information requirements.

Lease stipulations are designed to mitigate known impacts that have become apparent during environmental analysis. Seven stipulations are proposed for Proposed Sale No. 68. They are intended to mitigate impacts in or from the following areas: 1) biology, 2) cultural resources, 3) geological hazards, 4) and 5) military operations, 6) transportation of hydrocarbon products, and 7) wells and pipelines.

Further mitigating measures are available and are discussed in Section I.B.7. These additional measures include: oil spill contingency plans, the oil spill fund, Fishermen's Contingency Fund, oil spill modeling, prevention of groundwater contamination, exploration and development plans, structural verification programs, and aircraft overflight restrictions.

c. Summary of Impacts: The following discussion of impacts will be divided into those associated with the physical, biological and socio-economic environment. A detailed treatment of impacts including cumulative impacts is provided in Section IV.A, B, and C. The analysis summarized below assumes that all mitigating measures discussed above are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. Adverse impacts that would result if these stipulations are not adopted are discussed in Section IV.C.

i. Physical Environment: Impacts in this category are essentially restricted to those affecting water and air quality.

-Water quality around oil platforms and drilling rigs will be degraded to a distance of about 1000 m to 2500 m during exploration for and development of producing wells. The short-term effects of drilling muds and cuttings, formation water, small chronic leaks of hydrocarbons or the expected 1.1 spills of oil greater than 1,000 barrels should be minimal for water quality when the entire Proposed Sale No. 68 area is considered. The short-term effects should be minimal given the dilution potential of the open ocean environment. The exception to minimal impacts in the Proposed Sale No. 68 area would be from oil spills or routine discharges migrating into restricted bays or estuaries

such as Upper Newport Bay, Malibu Creek, or Ballona Creek Wetlands. Severe water quality degradation would occur in these areas with severe consequences for marine life. The long-term effects of the various OCS related accidental or routine discharges on water quality are not well understood at this time. The little evidence available does point, however, to minimal degradation in open ocean environments. Cumulative impacts from Proposed Sale No. 68 and previous sales in Southern California may begin to be significant for drill cuttings if all projected wells and platforms are developed. This significance would be felt in areas off the mainland which presently receive only small amounts of natural sediments. In general, the cumulative impacts from other discharges and accidental oil spills are expected to be of minor importance in the Southern California Bight in relationship to the large volumes of municipal discharges of oil, grease and other pollutants, and the yearly contribution of sediments from creeks and rivers.

-Air quality onshore will be impacted due to increased emissions of hydrocarbons and nitrogen dioxide. Lesser quantities of sulfur dioxide, carbon monoxide, hydrogen sulfide and particulates will also be emitted. Proposed Sale No. 68-related activities will slightly increase pollutant loadings in those areas already exceeding the air quality standards. These incremental increases are below the levels considered significant by the DOI air quality regulations. For those pollutants and locations presently meeting air quality standards, the slight project-related contribution to pollutant concentrations is not expected to cause new exceedences of the standards. In nonattainment areas, Proposed Sale No. 68 activities could further deteriorate air quality.

ii. Biological Environment

-Plankton, the impacts of oil and gas activity from Proposed Sale No. 68 on both phytoplankton and zooplankton should be insignificant. Some minor plankton blooms may appear around platforms, but these are expected to be localized and short lived. Large oil spills (greater than 1000 bbls) may cause temporary local plankton population declines.

-Intertidal impacts (to the benthos) from oil spills are predicted to be low to moderate in most cases. Rocky intertidal areas within the California Bight are generally more sensitive than sandy intertidal areas. Impacts on the latter most probably will be low. The oil spill model predicts a low probability of a spill reaching shore. One land segment within Ventura County has a 5 percent probability of a hit while Santa Catalina Island with a 13 percent probability and Santa Cruz Island with a 6 percent probability are the only segments having a greater than 5 percent probability of a hit within 30 days (for a spill of 1,000 bbl or greater).

Several sensitive species and/or rocky intertidal areas may experience a high ecological loss if a spill occurs. The probabilities of a 1,000 bbl spill hitting these species and/or areas within 30 days are as follows: 1) intertidal pools of the northwest coast of San Nicolas Island (3%), 2) air breathing intertidal limpets of Santa Barbara Island (4%), 3) algal (Pelvetia) beds and abalone herds of Santa Rosa's northern coast (2%).

-Subtidal bottom communities would generally suffer a low ecological loss from either an oil spill or drilling operations. Generally, rocky bottoms are impacted more than soft sediment bottoms. Specific areas with benthic assemblages

which could suffer a high ecological loss from oil operations are: 1) the rocky outcrops off Point Conception, which may contain unusual benthic assemblages, due to the unusual location of the area at the division point of two biogeographic provinces, 2) the Santa Rosa-Cortes Ridge because of its unusual species, and 3) the Tanner and Cortes Banks because of its highly productive community and coral population. Of these three areas only Tanner and Cortes Banks (with a 10 percent probability of being oiled by a 1,000 bbl spill) were used in the oil spill model. The probability of an oil hit at Point Conception is approximately 0.

-Fish and fisheries. Fish: A large oil spill may cause low to moderate ecological losses to surface fishes (e.g., Pacific bonito, jack mackerel, northern anchovy, California grunion). The impacts of manmade structures and drilling muds on fish populations are unknown.

Commercial fisheries: A large oil spill may cause temporary economic losses to the commercial fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. Mud mounds and trenches from the anchors of pipelaying barges could create a high impact to trawlers in the Santa Barbara Channel. Vessel traffic, particularly seismic boats, may temporarily cause moderate impacts to the commercial fishing industry.

Sport fisheries: A large oil spill may cause temporary economic losses to the sport fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. In adverse weather, surface structures may be a minor hazard to navigation in the Santa Barbara Channel and Inner Banks.

-Marine mammals and seabirds that frequent the waters of the Southern California Bight are, to some extent, vulnerable to impacts associated with offshore oil and gas development activities. The nature and extent of these impacts vary from species to species, season to season, and area to area within the Bight. For the SCB (Southern California Bight) fur seal population, oil contamination of the fur can result in hypothermia, loss of buoyancy, and death. All pinniped rookeries within the SCB are sensitive to disturbance from human intrusion; nursing pups may also be exceptionally vulnerable to the ingestion of oil. Whale species which use large sections of the Bight in their bi-annual migration, along with resident pilot whale, porpoise, and dolphin species, may be adversely affected by oil contact, noise from exploratory and development activities, and the indirect effects of resource development on the OCS environment. Seabirds of the SCB, whether nesting (resident) or migratory, may be adversely affected by oiling of plumage or the disturbance of breeding colonies and/or nesting sites. It must also be noted that projections as to the number of oil spills to result from Proposed Sale No. 68 activity are very low.

Marine mammals: Low ecological losses are anticipated for elephant seals, harbor seals, Guadalupe fur seals, California sea lions and Stellar sea lions. Note, however, that moderate ecological losses could be sustained by elephant and harbor seals if their nursery areas were oiled. The probability of this happening is low. Northern fur seals are expected to sustain moderate to low ecological losses but could suffer high ecological losses. The probability of this happening is low. None of the cetaceans in the SCB are expected to incur more than a

low ecological loss. The long-term effects of other contaminants such as drilling muds and cuttings and formation water upon marine mammals are not known. However, in comparison to the types, quantities, and toxicity of other pollutants entering the environment, and their apparent effect on the SCB fauna, Proposed Sale No. 68 contribution to this problem is probably insignificant.

Seabirds: No significant changes in the seabird populations of the SCB are anticipated. In the event that a spill occurs and strikes either these species or their habitats, the seabirds are generally expected to sustain minor impacts. Seabirds, both those which nest in and those which migrate through the proposed sale area, could be expected to suffer low ecological losses. Nesting occurs between January and August, while migrating species pass through the Bight in the spring and fall. Therefore, if a spill occurred, seabirds will be deleteriously impacted regardless of the season. Birds whose habitats and foraging areas are primarily terrestrial should experience no impacts from Proposed Sale No. 68 caused activities (see Table IV.C.6-1).

-Endangered species whose habitats and foraging areas are strictly terrestrial should experience no impacts from Proposed Sale No. 68 activities. Species inhabiting or utilizing coastal and offshore areas of the Bight will be affected depending upon the nature and extent of an oil spill. Ecological losses could range from low to high. However, no potential impacts from Proposed Sale No. 68 are expected to threaten the existence of a species or produce unacceptable destruction of its habitat. See Section IV.C.6.b.ii for discussion of effects of non-oil contaminants.

-Estuaries are potentially one of the most sensitive biological resources, relative to oil spills. If a large oil spill were to enter an estuary, a high ecological loss would result. However, most estuaries in Southern California have narrow openings, making it relatively easy to prevent oil from entering. Also, the probabilities of a hit, predicted by the oil spill model, are very low. The probabilities of a 1000 bbl spill reaching one of the major, relatively unaltered estuaries within 30 days are as follows:

Mugu Lagoon	1 percent
Anaheim Bay	2 percent
Tijuana Estuary	2 percent

It is apparent, therefore, that the Southern California estuaries are not likely to be impacted.

-Marine Sanctuaries. Low to moderate ecological losses are expected to occur in the Channel Islands National Marine Sanctuary, but there is a potential for high ecological losses.

-Terrestrial biological resources are expected to receive low ecological impacts.

iii. Socio-Economic Environment

-Demography. Changes associated with Proposed Sale No. 68 economic activity are closely related to the number of new jobs. Population increases for the Southern California region are also expected to peak in 1992. The distribution among the

Sale area counties for the peak year is: Santa Barbara 2,027; Ventura 1,651; Los Angeles 4,270; Orange 1,086; and San Diego 417.

-Coastal economy. Conditions will be affected. The development of the Proposed Sale No. 68 lease area would stimulate investment and would generate jobs in the Southern California region. The direct employment in offshore oil and gas activities would peak in 1986 at approximately 400 jobs. According to the results of the Curtis Harris economic model, this would generate indirect and induced employment in many other sectors of the economy. The total effect on employment, at its peak in 1992, would be an estimated 4,526 jobs. The majority of the jobs would be located in Los Angeles (2,089), Santa Barbara (843), and Ventura County (803).

-Public facilities and services. These services may be affected by increases in the population and oil spills. Additional public and private services and facilities such as schools, housing, health facilities, fire and police protection, water supply, and sewage treatment facilities could be requested. Electricity supply could be disrupted in the event of a large oil spill. Localized stress could occur on sewage treatment facilities, especially in some of the coastal communities. However, the most significant regional impact could be on water supply systems. Southern California communities face or expect water shortages in the early 1990s. Proposed Sale No. 68 induced population growth could put additional stress on the ability to provide adequate water supplies. Although an exact accounting is not possible, the tax structure could also be affected by the increased service and facilities demand. The extent of the impact is dependent upon the amount of industrial and commercial development that occurs in areas of growing population.

-Land use impacts from Proposed Sale No. 68 are expected to be minor. This is due to the present level of OCS activity and other industrialization in the proposed sale area. At present there is a well-developed oil and gas infrastructure in the area, and this should absorb any additional need for onshore facilities. Housing is already at a premium in Southern California, and will continue to be in short supply, partially due to the Space Shuttle and Missile X Programs at Vandenberg Air Force Base and ongoing OCS activity. Additional housing needs for Proposed Sale No. 68 are expected to be about 3,500 housing units during the peak year of 1992 as a result of both direct and indirect activity. This number is minimal in comparison to the present development in the area, but when combined with other ongoing projects the impact becomes a major concern to the local areas. Local land use plans, sewage and water moratoria, and local zoning policies will be of help to the local communities in regulating and restricting the total development of their own areas. The total impact of Proposed Sale No. 68 on the land use is expected to be relatively minor, with development occurring in areas where the local communities are receptive to the continued growth.

-Recreation impacts will probably be localized and short term, with mild economic consequences over the total sale area. However, in the event of an oil spill, they could become regional in scope and more economically damaging depending on the beach location and upon the size, duration, nature and season of the spill, and the publicity associated with it. The placement of additional platforms in the area will have a very minor effect on the recreational

boating of the area. Increases in vessel traffic from the additional work boats will have a minimal impact on recreational boating. Tourism is the second largest industry in the proposed sale area, and in the event of a pollution incident, there could be localized reductions, which could have a major impact on the local community involved. Over the total proposed sale area, however, tourism is expected to remain normal. This is due in part to the number of non-water oriented tourist facilities in the area. Overall, the impact on the recreation industry is expected to be minor, even in the event of a pollution incident, due to the diversity of facilities which are found in the area.

-Refineries. There should be no impacts on refineries in the Los Angeles basin based on the following assumptions:

- (1) Refineries have the capabilities and would process all of the crude oil from Proposed Sale No. 68.
- (2) Crude from Proposed Sale No. 68 would back out an equal amount of either foreign or Alaskan crude oil.

However, significant impacts could occur if crude from the proposed sale is of such quality that it could not be refined locally. In this case, extensive modification to the refining process may be required.

If the oil companies decide to transport Proposed Sale No. 68 crude by tankers to other refineries than those that are located in the Los Angeles Basin, the expected number of oil spills will be slightly higher.

-Transportation systems. The proposal (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) could cause the following impacts: 1) some increased employment in the shipping industry and at the ports; 2) some increased use of limited space and port resources; 3) oil spill causing rerouting of ship traffic and delayed entry or departure of ships from ports, in the event of a major spill; 4) increase cost of exploration and development due to traffic lanes crossing proposed tracts; 5) slight increase in vessel accidents; 6) small increase in the number of pipeline failures, causing oil spills; 7) minor increases in traffic movements on highways, railroads, and at airports; and 8) insignificant impacts to offshore structures. The current USCG policy is to not permit temporary or permanent structures within vessel traffic lanes or precautionary areas.

In the event that temporary and/or permanent structures are permitted within the TSS, impacts on ports and shipping would be: high economic losses to the shipping and oil industries (due to possible increased numbers of accidents between vessels and/or between vessels and offshore structures), increased probability of a large oil spill, and loss of lives.

-Military. Several tracts are being evaluated that fall within the Pacific Missile Test Center, San Clemente Island Test Range and the Long Beach Combat Systems Evaluation Range. Further Department of Defense/Department of the Interior negotiations are in progress to achieve a mutually satisfactory resolution to the space-use conflicts.

-Cultural resources. This proposal could commit some areas of relatively shallow waters of the OCS to a permanently disturbed condition by placing large and relatively permanent sources of magnetic anomalies on the seafloor during the life of the proposed project. Because of the apparently wide distribution, and because of the amount of industrial activity expected as a result of this proposal, it is possible there will be some loss of historic and prehistoric archaeological sites on the OCS. Additional losses, especially from pipelaying activities, could occur within State waters. However, mitigative efforts required of the lessees will decrease expected losses substantially. These mitigative efforts should result in a low to moderate risk to marine archaeological sites.

The level of impact for terrestrial archaeological sites is expected to be low. During the life of the proposal, the visual environment of some listed or eligible National Register sites may be adversely affected, but this is not expected. Impact to gathering activities in the intertidal zone by various ethnic groups is expected to be low to moderate, and of a temporary nature. However, indirect effects on the individuals and groups engaged in such activities could be long term. Depending on the location of industrial activities resulting from this proposal, the adverse effects on areas sacred to Native Americans is expected to be low to moderate.

-Visual resource impacts from OCS development cannot be quantified with exact certainty. However, a relative value can be assigned which could be used as a guide to assess the magnitude of the impact of various OCS structures on the landscape units which comprise the proposed Sale area. In POCS Technical Paper No. 81-5 (The Granville Corporation, 1981) the shoreline is categorized from an aesthetic resource basis, and then each landscape unit is assessed for the potential impact of various OCS development scenarios. The rating was done from a landscape architectural viewpoint. When the development scenarios were incorporated into the rating system, it was determined that certain areas would have no significant impact. Although there are some areas in which severe impacts would occur from OCS development, in most areas the impacts would be minimal.

d. High and Low Case Estimates: The environmental impacts from Proposed Sale No. 68 are based upon the conditional mean resource estimate. This represents the "middle ground" in the estimated range of potentially recoverable oil and gas resources. This range is spread from 20-126 million bbl of oil and 46-225 billion cubic feet of gas for the Santa Barbara Channel, from 16-140 million bbl of oil and from 22-193 billion cubic feet of gas for the Inner Banks and 20-216 million bbl of oil and 70 to 811 billion cubic feet of gas for the Outer Banks. It is very difficult to estimate oil and gas resources until exploratory wells have been drilled. In past California OCS sales, initial estimates of oil and gas resources have turned out to be overly optimistic. That is, the oil and gas resources discovered and consequently the number of platforms installed, was far less than expected (see Appendix F).

There are six main categories of impact producing agents: 1) oil spills, 2) manmade structures offshore and onshore, 3) vessel traffic, 4) noise and

other disturbances, 5) effluents and discharges, and 6) socio-economic activities. Potential impacts from the first 5 categories are almost all deleterious. Net socio-economic benefits tend to increase. If discoveries are made which result in a low case development, all the potentially deleterious impacts associated with the first 5 categories above will (probably) be reduced. Sufficient data are not available to quantify the extent of this reduction relative to the level of impacts described in Section IV.C since impacts are non-linear with respect to discovered resources. The potential socio-economic benefits will be reduced to an unquantifiable extent, also. An increase in actual, over estimated, recovery would of course increase impacts for the first five categories and increase potential socio-economic benefits in an analagous manner. It must be noted that we are speaking of net socio-economic benefits for the entire region. Some localities may receive disproportionate benefits as others experience primarily costs/strains.

Effects of High Resource Scenario. It is possible that production could vary if anything other than the mean level of resources was recovered. For the high case, more wells would have to be drilled and more production facilities would be required. In this case, the development that was assumed for the most likely case and the additional development described below is assumed to occur. These assumptions should not be regarded as rigid projections for future events.

-Resources. It is assumed that the conditional high level of resources would be produced (Table I.B.1.b-2). The resource estimates for the 5 percent conditional probability are (given in millions of barrels): Santa Barbara Channel, 126; Inner Banks and Basins, 140; and Outer Banks and Basins, 216. Corresponding estimates of gas (given in billion cubic feet) are: Santa Barbara Channel, 255; Inner Banks and Basins, 193; and Outer Banks and Basins, 811. There will be 12 platforms and 7 subsea completions required to produce the resources. There would also be 378 exploratory and delineation wells and 339 development wells drilled.

-Transportation. As in the case of the expected level of development, pipeline transportation would be used for the Santa Barbara Channel and Inner Banks and Basin areas. Two oil pipelines, and two gas pipelines totaling approximately 150 miles^(a) would be needed to tie into the existing network, the Santa Barbara Channel and the Inner Banks.

Because the high case estimate for gas in the Outer Banks is 8 times the risked mean, it is expected that this would cause a change from reinjecting the gas, to laying a gas pipeline along the Santa Rosa-Cortez Ridge to tie into the gas system in the Santa Barbara Channel onshore area. This would require a pipeline approximately 175 to 225 miles in length depending on the route taken, through, or around, the Channel Islands National Marine Sanctuary. Additionally, a pipeline for the oil would also be constructed. This pipeline would be the same length and parallel to the gas pipeline. Construction of these pipelines would, of course, be dependent on the cost of pipelines versus the revenues obtainable from the resources.

(a) The pipeline lengths stated are based on POCs Technical Paper No. 81-1 (Yamasaki, 1981). The length was obtained by calculating the average pipeline length for each platform in the areas, and adjusting this to the high resource estimate.

-Oil Storage and Pumping Stations. Oil storage will remain the same as projected for the mean case. Another pumping station would be required if a pipeline were constructed from the Outer Banks and Basins.

-Oil Refineries. These will remain the same as projected for the mean case.

-Gas Processing Plants. The number will remain the same as projected for the mean case, although expansion of the existing units will be required to accommodate the gas from the Outer Banks.

-Operations Support Bases. These will remain the same as projected in the mean case.

-Summary of Environmental Consequences (High Resource Estimate). Assuming the high level of resources are recovered and transported to shore by pipeline, the degree of impact could more than double that described above for the mean resource estimate of Alternative 1.

Impacts affecting the offshore environment from platform discharges, pipeline installation, and large oil spills could be approximately twice that expected under the mean case. A total of 440,836 barrels of drilling muds, 787,044 barrels of drill cuttings, (and 460 million barrels of formation water) could be discharged under the high case.

Biological resources would be exposed to a greater risk of impact under the high-level estimate. Planktonic and benthic communities could decrease temporarily if a significant decline in water quality occurred. Marine fish populations may be reduced from a probable increase in the number of large oil spills occurring over the life of the field. Fishing area lost to the commercial fishing industry from platforms and pipelines would increase, but would still be small.

A higher number of spills in the lease area could also pose a threat to sensitive coastal habitats.

Adverse impacts to marine mammals and seabirds could be increased due to the probable increase in the number of large oil spills and increases in small chronic discharges from platforms. Population declines and high mortality rates could occur.

Due to the increased risk of oil spills, there could be adversely affected endangered species. Brown pelicans could be exposed to a higher possibility of impact. Drilling-related impacts could increase significantly as more than twice as many wells are projected under the high case than under the mean. Higher mortality rates and population reductions could result.

Increased impacts to air quality caused by the need for additional or enlarged onshore facilities, particularly the gas processing plants, would depend on the sulfur content of any gas discovered.

Impacts to recreation and tourism could increase if the high resource estimate is recovered. There would be an increase in the probability of a spill from the lease area impacting sandy beaches.

The additional onshore support facilities required for a high case find would probably not result in any major new land use conflicts since all facilities would be sited in accordance with applicable State and local land use policies. However, the conflicts noted under Alternative 1 would still occur.

Since the resource estimates associated with this high resource scenario are about double those of the mean resource scenario for both oil and gas, forecast impacts are correspondingly greater. The total jobs induced by the Sale could total over 9,491 for the region in 1992 should the high level of resources be developed. Impacts on local communities are also expected to be greater.

-Conclusion of Environmental Consequences (High Resource Estimate). If the high level of resources are recovered and transported to shore by pipeline, more severe adverse impacts to some of the biological resources of the Southern California region could occur. The increase in severity of impacts over the mean case would be due to the greater amount of drilling discharges and increased risk of large oil spills. Coastal and marine birds and animals could suffer higher mortality rates and possible short-term minor population declines.

Greater community disruption could be expected, and the impacts of communities and counties would be correspondingly higher than those associated with a mean level of resource development. Conflicts over land use and potential adverse impacts to recreation areas could be doubled over those expected under the mean case.

2. Alternative 2 - Modify the Sale by Deleting Tracts to Reduce Potential Conflicts with the Channel Islands National Marine Sanctuary

a. Description of the Alternative: This alternative will delete 13 complete tracts and 24 partial tracts which lie within the 6 nm boundary of the Channel Islands National Marine Sanctuary. Figure II.B.2-1 delineates the boundary for this National Marine Sanctuary, while Table II.B.2-1 lists the specific tracts that are both totally and partially within the sanctuary. This deletion option would remove about 8 percent of the area (approximately 38,000 hectares or 94,000 acres) under consideration for Proposed Sale No. 68.

Between Point Conception and the Mexican Border are eight islands, referred to as the Channel Islands. They are usually divided into a northern and southern group. The northern group consists of San Miguel, Santa Rosa, Santa Cruz, and Anacapa (actually 3 separate islands). Santa Barbara, San Nicolas, Santa Catalina, and San Clemente comprise the southern group (see large color visual). For a detailed discussion of these islands, refer to the following: 1) FEIS for OCS Sale No. 48 (U.S. Dept. of the Interior, 1979), FEIS on the Proposed Channel Islands Marine Sanctuary (U.S. Dept. of Commerce, May, 1980) and General Management Plan, Channel Islands National Park (National Park Service, September, 1980).

The Channel Islands National Marine Sanctuary, designated on September 22, 1980, includes only the ocean area from the mean high tide line seaward to 6 nm (see Figure II.B.2-2). The National Park includes the ocean area around the same islands (San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara) but only to a distance of 1 nm. The Park, unlike the Sanctuary, also includes the land portion of the islands. Ownership on these islands is shown in Table II.B.2-2. San Nicolas, Santa Catalina, and San Clemente are not included within either the sanctuary or the National Park.

The northern Channel Islands are important for numerous reasons. Particularly significant are the marine biological, archaeological, and paleontological resources found on the islands. For example, they contain the largest and most diverse temperate water pinniped (seals and sea lions) community in the world. More than 36,900 pinnipeds, of 6 different species, were counted on the islands themselves, excluding the surrounding waters (Bonnell, et al., 1980). Also there is evidence of human inhabitants going back to 30,000 years BP, and fossils of the dwarf mammoth (USDI, 1979).

The resources of the total and partial tracts to be deleted under this alternative represents less than 8 percent of the conditional mean oil resources and less than 15 percent of the conditional mean gas resources. The estimated probability of success in finding these economically recoverable resources is 30 percent for oil and 36 percent for gas. Through the adoption of this alternative, the oil and gas development and exploration activities and associated activities listed below will not occur within the sanctuary boundary. However, the total number of wells and platforms anticipated to result from the proposed Sale (Alternative 1) would not proportionally decrease as listed below.

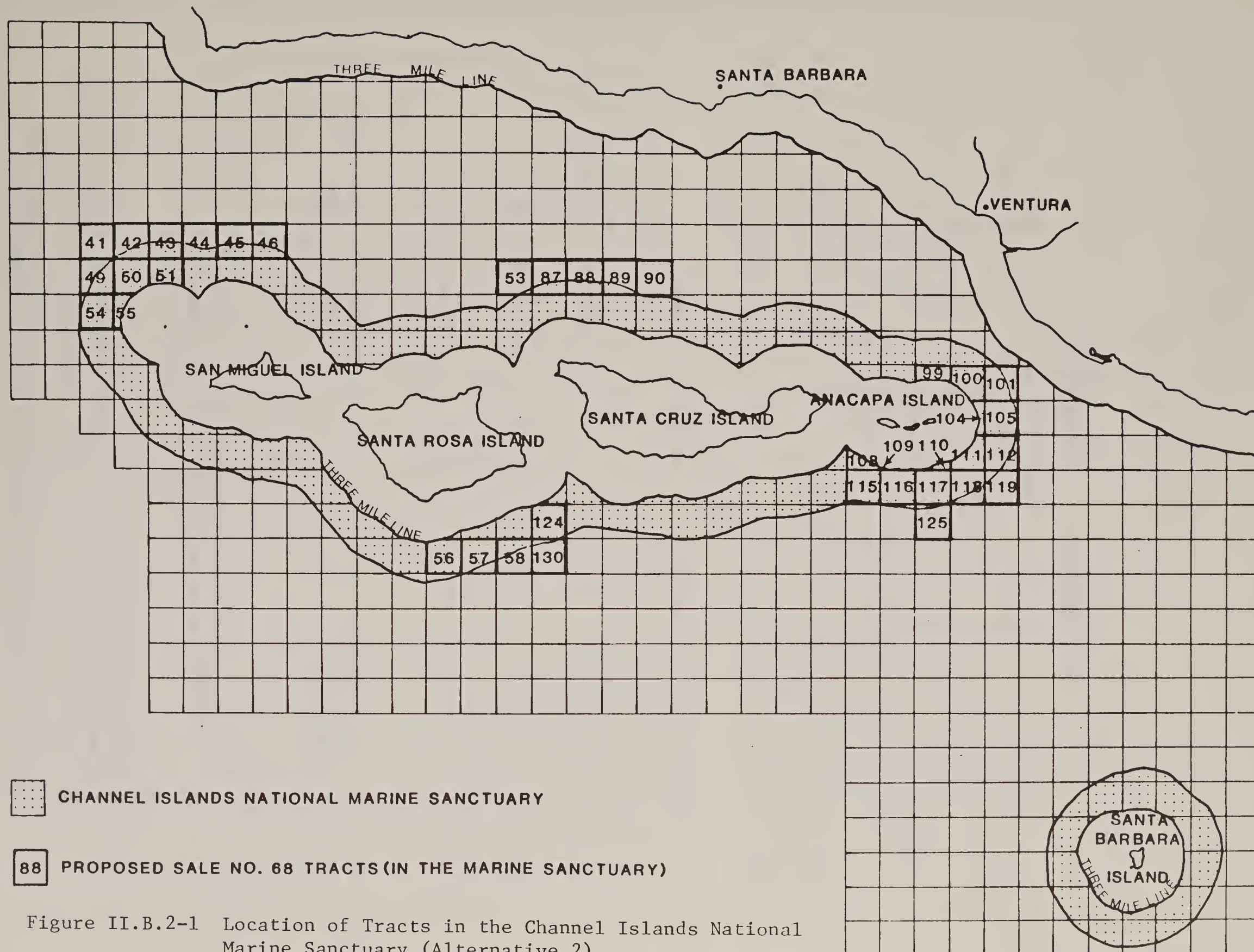


Figure II.B.2-1 Location of Tracts in the Channel Islands National Marine Sanctuary (Alternative 2)

Note: Refer to large color visual for locations of existing leased tracts.

TABLE II.B.2-1

PROPOSED TRACTS WITHIN THE SANCTUARY

	<u>Tract Totally Within Sanctuary</u>	<u>Tract Partially Within Sanctuary</u>	
	50	41	88
	51	42	89
	55	43	90
	56	44	101
	99	45	105
	100	46	112
	104	49	115
	108	53	118
	109	54	119
	110	57	124
	111	58	125
	116	87	<u>130</u>
	<u>117</u>		
Total	13	Total	24

TABLE II.B.2-2

LAND OWNERSHIP ON THE NORTHERN CHANNEL ISLANDS*

	Area (Acres)	Percent Area
San Miguel		
Dept. of Defense	9,325	100
Santa Rosa		
Vickers Ranch	52,794	100
Santa Cruz		
Nature Conservancy	12,400	20
Stanton Ranch	41,881	69
Cherini Ranch	6,264	10
Other Federal	100	01
Anacapa		
Dept. of the Interior	538	77
Other Federal	161	23
Santa Barbara		
Dept. of the Interior	595	91
Other Federal	57	9

*These Figures are Approximate, and are taken from the General Management Plan, Channel Islands National Park by National Park Service, September, 1980.

- 7 - Exploration wells
- 6 - Delineation wells
- 13 - Development wells
- 1 - Platform (conventional)

Nonetheless, if this alternative is adopted, the location of the platforms or drilling sites may change since there will be no drilling within the marine sanctuary or within 6 nautical miles of the islands.

Presently, there are portions of 7 leased tracts within the sanctuary boundary (large color visual). North of San Miguel Island there are 2 tracts that were leased in Sale No. 48 (OCS-P0356 and OCS-0357). Approximately half of Lease OCS-P0356 is within the Sanctuary, while less than one-tenth (1/10) of Lease OCS-P0357 is in the Sanctuary. Northeast of Santa Cruz Island and north of Anacapa Island there are portions of 5 tracts sold in the 1968 Santa Barbara Channel lease sale that are in the sanctuary boundary. These leased blocks and their approximate proportions within the Sanctuary are as follows: OCS-P-210 (1/8), OCS-P-205 (3/4), OCS-P-204 (3/4), OCS-P-203 (1/2), OCS-P-202 (1/20). There are no existing or proposed platforms or facilities on the portion of these 7 tracts that lie within the sanctuary. However, Platform Gina lies in the portion of OCS-P-202 that is outside the sanctuary boundary. Also, it is likely that a platform will be installed on OCS-P-205. These tracts lie partially inside the sanctuary boundary.

b. Summary of Impacts: Deleting the tracts within 6 nm of the islands will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. Also, it would allow more time for oil spill clean up and containment equipment to be mobilized. The oceanographic conditions off Southern California are fairly good for handling an oil spill. With this additional time, the chances of effectively protecting sensitive marine resources are increased by 4-5 hours. Specifically, the sensitive intertidal and nearshore subtidal resources and pinnipeds and seabirds and their resources may be less likely to be directly contacted by the oil. Even if the oil did reach these resources, there would be less of it; it would be more weathered; and it would be less toxic.

Increasing the distance between OCS development and these resources would also reduce the vessel traffic, human intrusion and noise generated during exploration and development. Potential disruption of critical breeding and nesting activities for seabirds and pinnipeds would, therefore, be reduced. Also, the risk of damage from platforms and pipelines, to hard bottom subtidal areas, would be eliminated. Lastly, deleterious effects from drilling muds, cuttings and formation water would be reduced. Unless specifically stated otherwise, for each resource the difference in the impacts between this alternative and Alternative 1 is unquantifiable.

It is important to note that the Channel Islands National Marine Sanctuary and the National Park was originally established because of the unusual and valuable resources. Adopting Alternative 2 (deleting tracts within the

sanctuary) would help maintain the characteristics and qualities that were prime reasons for designating the Northern Channel Islands as a National Marine Sanctuary and a National Park.

Concerning specific resources categories, if this alternative is adopted, the impacts will be the same as described under Alternative 1 except for the following:

Air quality would not significantly be changed under adoption of this alternative. If this alternative is not adopted and development takes place within the Santa Barbara Channel Marine Sanctuary, the NO_2 concentration could be raised to DOI annual significant level of 1 ug/m^3 .

The water quality in the Channel Island National Marine Sanctuary would suffer less impact under Alternative 2 due to elimination of mud and drill cuttings being dumped, and less possible oil spill occurrences in the area. Water quality for the entire lease sale area would not be significantly different from Alternative 1, however.

The probability of impacts on the intertidal communities of the Marine Sanctuary would decrease because the alternative will increase the ability to prevent a moderate to possibly high ecological loss to the intertidal communities of the Channel Islands. The subtidal benthos will experience reduced impacts at the sites of platform and drilling operations because of reduced drill cuttings and muds. This will be particularly true at the southern sides of the islands where there is reason to believe there are rocky bottoms. There will be a slight reduction in the potential impacts on fish, commercial fisheries, sport fisheries, marine mammals, seabirds, and some endangered species, especially brown pelicans, because of the increased time available to prevent an oil spill from reaching shore or important foraging areas.

If Alternative 2 is adopted, there would also be less low level chronic long term pollution reaching the marine sanctuary and the shores of the islands within it. Impacts on biological communities from this stress are not known, but over the next 25 years, some detrimental impacts could occur.

Adoption of Alternative 2 will reduce the probability of impacting the northern Channel Islands and its surrounding waters which have been designated significant biological areas by the State of California (ASBS) Department of the Interior (National Park) and Department of Commerce (Marine Sanctuary) for the same reasons given for the other resources mentioned in this summary.

Adoption of Alternative 2 could cause a minor reduction in the socio-economic impacts of the area because of reduced resource recovery, although resource and associated development activity estimates indicate no measurable change is likely.

Potential impacts to recreation would be slightly reduced because there is less chance of oil from a spill occurring within the recreation areas of the Marine Sanctuary.

Reduction of oil recovered from a Sale results in reduced transportation of oil resources. For this reason, adoption of Alternative 2 would result in a small reduction in potential impacts to port economy, vessel accidents, number of pipeline failures, highway-railroad-airport traffic, and offshore and onshore structures.

Adoption of Alternative 2 would result in removing four tracts from the Department of Defense's concern, although military maneuvers will still be greatly restricted in the sanctuary.

Potential impacts to cultural resources would be reduced slightly.

Potential impacts to visual resources would be slightly reduced along the north, south and west sides of the sanctuary. However, a moderate reduction in impact could occur around Anacapa Island due to the fact that approximately one-half of the Proposed Sale No. 68 area inside the sanctuary is around Anacapa. This area is also clearly visible from the mainland.

Tracts 44, 45, 53, 56, and 99 have been identified as having geologic conditions that could adversely affect oil and gas operations. Adoption of Alternative 2 would eliminate these tracts of potential concern. However, existing regulations and the geologic stipulations are expected to adequately mitigate adverse geologic concerns.

Cumulative impacts are not expected to be significantly different from impacts discussed under Alternative 1.

3. Alternative 3 - Modify the Sale by Deleting Tracts in the Adjunct to the Santa Barbara Channel Ecological Preserve

a. Description of the Alternative: Alternative 3 would eliminate three complete plus five partial tracts in the adjunct to the Santa Barbara Channel Ecological Preserve (Figure II.B.3-1).

The Santa Barbara Ecological Preserve was established March 21, 1969 by Public Land Order 4587. The Preserve consists of ten full and partial tracts "withdrawn from all forms of disposition, including mineral leasing, and reserved for use for scientific, recreational, and other similar uses." Eight additional tracts (full and partial) adjacent to the Preserve were designated as an "adjunct to the Ecological Preserve." These tracts have become known as the Buffer Zone and were removed from consideration for leasing by the Order. This Order reflects Department of the Interior past policy regarding OCS leasing in this area. Leasing in the adjunct to the Santa Barbara Channel Ecological Preserve will require a change in that policy.

The eight tracts in the adjunct to the Santa Barbara Channel Ecological Preserve are on a proven hydrocarbon trend. There is high probability of hydrocarbon discovery. The area size and geologic nature of hydrocarbon entrapment in this area make it impossible to give resource estimates and development scenarios without disclosing proprietary information.

b. Summary of Impacts: The impacts for the adoption of Alternative 3 would be the same as those for Alternative 1 except as follows.

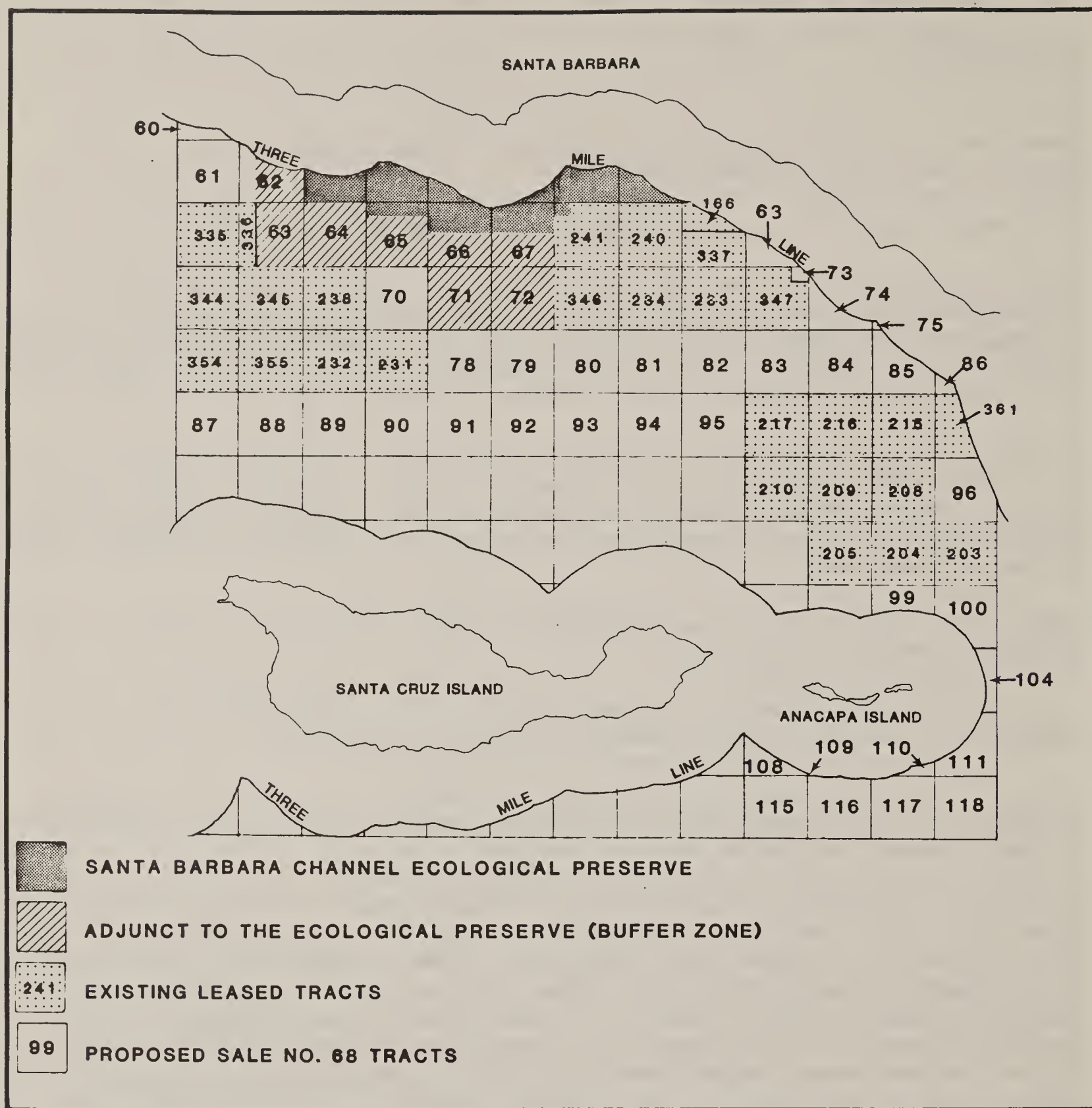


Figure II.B.3-1 Location of Tracts in the Adjunct to the Santa Barbara Channel Ecological Preserve (Alternative 3)

Water quality in the adjunct to the Santa Barbara Channel Ecological Preserve would suffer less impact under Alternative 3 due to elimination of mud and drill cuttings being dumped, and less possible oil spill occurrences in the area. Water quality for the entire proposed lease sale area would not be significantly different from Alternative 1, however. Alternative 3 would slightly decrease the probability of a hit at two segments, inner Santa Cruz Island and the land segment between Naples and Santa Barbara. The mainland area contains one of the isolated rocky intertidal areas, which could require longer to recover if hit by a large oil spill.

Air quality would not be significantly changed under adoption of this alternative. If this alternative is not adopted and development takes place within the adjunct to the Santa Barbara Channel Ecological Preserve, the NO_2 concentration could be raised to the DOI annual significant level of $1 \text{ ug}/\text{m}^3$.

There may be a reduction of impacts to large populations of the benthic organism Listriolobus pelodes due to the elimination of platform construction and drill cuttings within the area if Alternative 3 is adopted.

Impacts to fish, commercial fisheries and sport fisheries would be slightly less than described under Alternative 1. Similarly, the risk of impacts resulting from a spill striking the breeding and roosting colonies of seabirds and harbor seal pupping grounds of Santa Cruz and Santa Rosa Islands would be slightly reduced.

Alternative 3 will reduce the probability of oil reaching the relatively unaltered estuary Goleta Slough near Santa Barbara and the inner or northern shores of Santa Cruz Island and the shallow island shelves of the Channel Islands Marine Sanctuary. The former would most probably be a high ecological loss and the latter a small to moderate ecological loss.

Adoption of Alternative 3 could cause a minor reduction in the socio-economic impacts of the area because of reduced resource recovery, although resource and associated development activity estimates available do not allow measurement in changes in the economic activity. The potential impact to recreational resources, particularly around Santa Barbara, would be reduced slightly.

Potential impacts to port economy, vessel accident, number of pipeline failures, and highway-railroad-airport traffic, and offshore and onshore structures would be decreased slightly. Also, there would be a small reduction in probabilities of an oil spill impacting the ports.

The adoption of the alternative would remove eight tracts from Department of Defense concern.

The probability of impacts to cultural resources would be reduced slightly.

The potential impact to visual resources would be reduced slightly with the elimination of platforms that could be seen from shore.

Tracts 62, 63, 64, 65, 66, and 67 have been identified as having geological conditions that could adversely affect oil and gas operations. Adoption of

Alternative 3 would eliminate these tracts of potential concern. However, existing regulations and the geologic stipulation are expected to adequately mitigate adverse geologic concerns.

Cumulative impacts are not expected to be significantly different from impacts discussed under Alternative 1.

4. Alternative 4 - Modify the Sale by Deleting Tracts Adjacent to Santa Monica Bay

a. Description of the Alternative: This alternative will delete 12 tracts that lie adjacent to Santa Monica Bay. Santa Monica Bay is the largest bay in Southern California, and is bounded on the north by Point Dume and on the south by Palos Verdes Peninsula. It has a southwesterly exposure and extends out to approximately the 750 meter bathymetric contour. The location of the bay and the 12 tracts are shown in Figure II.B.4-1. This deletion would remove about 6% of the area under consideration for Proposed Sale No. 68. The tracts to be deleted under this alternative represent less than 22% of the conditional mean oil, and less than 26% of the conditional mean gas resources for the proposed sale (Alternative 1). The estimated probability of success in finding these economically recoverable resources will be 4% for oil and 5% for gas. These probabilities are low due to the cumulative effect of the geological and geophysical risks and the economic considerations of developing deepwater prospects. Through the adoption of this alternative, the oil and gas development and exploration activities and associated activities listed below will not occur. However, the total number of wells and platforms anticipated to result from the proposed sale (Alternative 1) would not proportionally decrease as listed below.

- 5 - Exploration Wells
- 4 - Delineation Wells
- 22 - Development Wells
- 1 - Platform (deep water)

b. Summary of Impacts: The probable impacts from the adoption of Alternative 4 would be the same as those for Alternative 1 except as follows.

Water quality in Santa Monica Bay and the areas near Santa Catalina and Anacapa Islands would suffer less degradation, due to no mud and drill cuttings being dumped, and less possible oil spill occurrences in the area under this alternative. The entire lease sale area water quality impacts would, however, not be significantly different compared to Alternative 1. This reduction in water quality degradation would be beneficial to rocky intertidal and soft bottom areas. Both Point Dume and Palos Verde Peninsula are sensitive rocky intertidal areas and could have retarded recoveries if impacted due to their isolation. Impacts to benthic soft bottom organisms would be prevented in the immediate area of potential activity with this alternative.

Air quality would not significantly be changed under adoption of this alternative.

Fish, commercial fisheries and sport fisheries in the Santa Monica Bay area would have a slight reduction in impact compared to Alternative 1. Species in

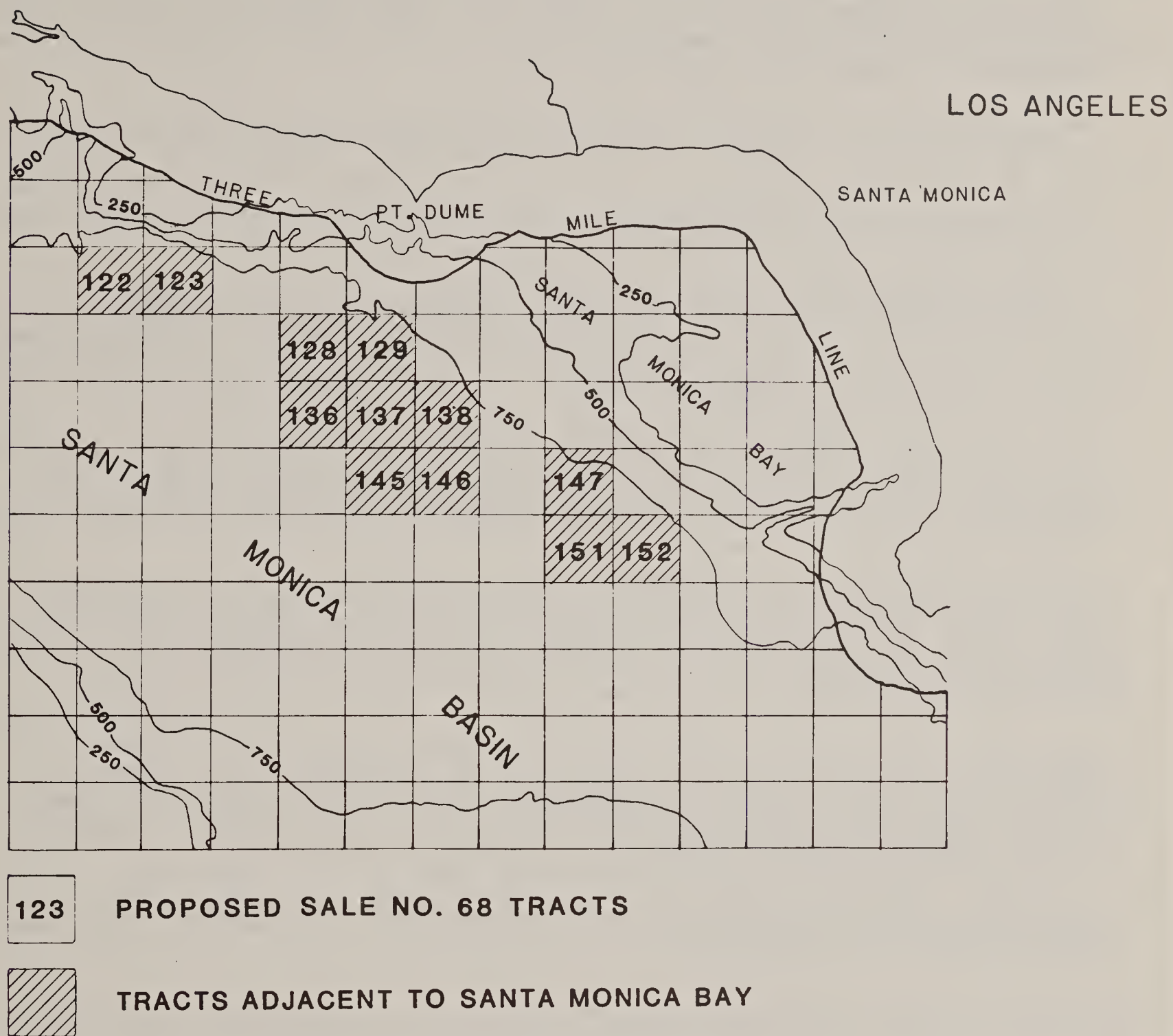


Figure II.B.4-1 Location of Tracts Adjacent to Santa Monica Bay (Alternative 4)

this area would be less likely to be impacted by oil, discharges or effluents. Commercial and sports fishing would have a reduction in the probability of being precluded by an oil spill.

There will be a slight reduction in the potential impacts to marine mammals, seabirds and endangered species. The Ballona Creek Estuary will have a reduction in the probability of impact from an oil spill as will Anacapa Island and the Channel Islands Marine Sanctuary.

A measurable reduction in the socio-economic impacts to the coastal economy could be seen by the adoption of this alternative. The impact to recreation could be moderately reduced from those for Alternative 1 in that protection would be given to the Santa Monica Bay and Santa Catalina Island recreational activities by the adoption of Alternative 4.

This alternative would result in a small reduction in potential impacts to the ports, in vessel accidents, in potential pipeline failures, in highway/railroad/airport traffic, and in offshore and onshore structures. Military concern over the twelve tracts would be removed.

Visual resources would have a moderate reduction in impact in that this alternative would remove all potential offshore OCS facilities from sight of the Santa Monica Bay shoreline. Potential impacts to cultural resources would be reduced slightly.

The overall impact of the adoption of this alternative would be a moderate reduction in the potential impact of the proposed sale (Alternative 1) for the Santa Monica Bay Area. Over the entire sale area the reduction in impact is expected to be slight.

Tracts 123, 128, 129, 137, 138 and 147 have been identified as having geologic conditions that could adversely affect oil and gas operations. Adoption of Alternative 4 would eliminate these tracts of potential concern. However, existing regulations and the geologic stipulation are expected to adversely mitigate adverse geologic concern.

Cumulative impacts are not expected to be significantly different from impacts discussed under Alternative 1.

5. Alternative 5 - Modify the Sale by Deleting Tract 165 in the
Precautionary Area

a. Description of the Alternative: Alternative 5 would delete Tract 165 (2304 ha), which lies in the Los Angeles-Long Beach Precautionary Area, from the proposed sale. The Los Angeles-Long Beach Precautionary Area is part of the Port Access Route (PAR) that exists south of the Los Angeles/Long Beach Harbor (Figure II.B.2). Precautionary Areas within the proposed sale area are established by the Eleventh District Coast Guard and are described as areas within defined limits where ships must navigate with particular caution.

The Eleventh Coast Guard District has proposed to reconfigure the present approaches to the Los Angeles/Long Beach Precautionary Area in order to reduce vessel routing conflicts. Presently, two Traffic Separation Schemes (TSS) (consisting of a northbound lane, a southbound lane, and a separation zone between the two lanes) feed into this harbor region (Figure II.B.5-1): 1) the Santa Barbara Channel TSS which routes shipping traffic to and away from the Santa Barbara Channel area; and 2) the Gulf of Santa Catalina TSS which routes traffic into and away from the harbor region. The proposed reconfigurations to the Precautionary Area are as follows (refer to Figure II.B.5-1): a) move the northbound shipping traffic lane of the Santa Barbara TSS two nautical miles south; b) move the southbound lane of the Santa Barbara TSS one nautical mile south; c) reduce a portion of the separation zone of the Santa Barbara TSS from two miles to one mile; d) move the southbound lane of the Gulf of Santa Catalina TSS one and one-half nautical miles to the west; and e) alteration of the Precautionary Area. For additional information on the PAR, see Section III.C.7.a. Currently, U.S. Coast Guard policy does not permit exploratory drilling operations or permanent structures (e.g., oil/gas platforms) in Precautionary Areas.

This deletion option would remove less than 1 percent of the area under consideration for Proposed Sale No. 68. Resource estimates and development scenarios cannot be made on a single tract without disclosing proprietary information. However, Tract 165 is on the same hydrocarbon trend as the proven reserves within Leased Tract 300, located approximately 5 miles southeast. Because Tract 165 is on the same trend, there may be a good chance for a hydrocarbon discovery.

For purposes of environmental analysis, we have assumed that deletion of Tract 165 would not significantly change the number of wells and number of platforms for the proposed sale (Alternative 1).

b. Summary of Impacts: If this alternative is adopted, the impacts will be the same as described under Alternative 1 except for the following: A slight reduction of potential impacts caused by routing conflicts within the existing or the proposed reconfiguration of the Precautionary Area; removal of one tract from Department of Defense concern.

Potential impacts to the other resource categories discussed in this EIS would be reduced slightly.

Cumulative impacts are not expected to be significantly different from impacts discussed under Alternative 1.

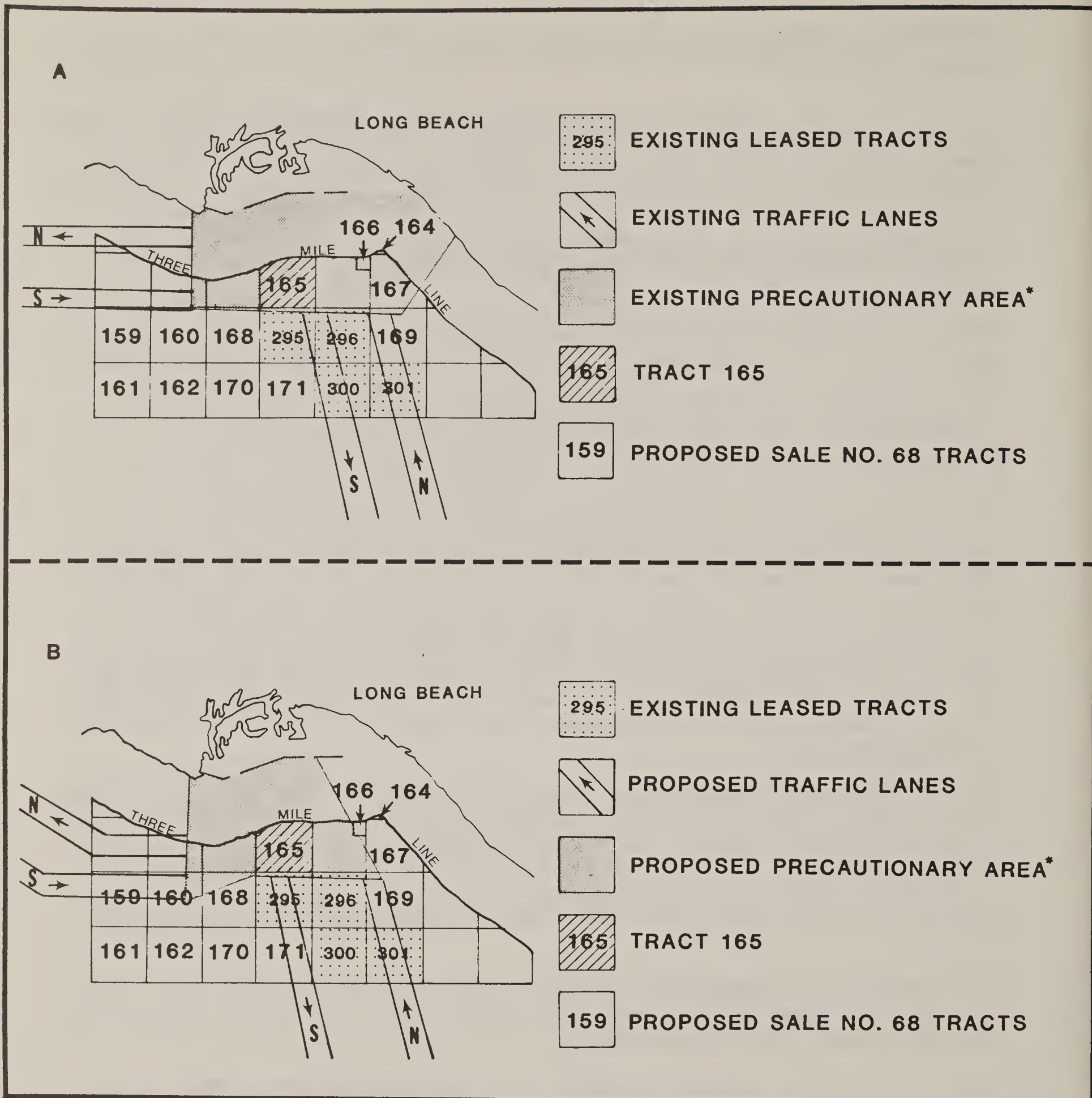


Figure II.B.5-1 Precautionary Area Located South of the Los Angeles/Long Beach Harbors:
 A) Existing Boundaries; B) Proposed Reconfiguration.
 *Boundary Extends to Shore Inside Breakwater.

6. Alternative 6 - Cancel the Sale

a. Description of the Alternative: This alternative would constitute the no action alternative. The activities associated with the proposal would not occur. All potential physical and biological impacts arising from the discharge of drilling muds, cuttings, formation water and sewage, and those resulting from population shifts or the placement of rigs, pipelines, and related structures, would be eliminated.

If cancellation should occur, it will not preclude all oil and gas activity in the Southern California Bight. Exploration and development will continue as a result of the 1968 Sale and Sale Nos. 35 and 48, and, where commercial discoveries are made, production activities could result. In addition, another two California Sales are included on the 5-Year Leasing Schedule and it is possible that tracts in the Southern California region could be included in these proposals. If Proposed Sale No. 68 was cancelled for any reason, any of the tracts included in it could possibly be renominated for a later Sale.

b. Summary of Impacts: Cancelling the Sale will eliminate all the impacts that are expected to result from the proposal, but not all impacts from oil and gas activity in the Southern California region, since exploration and development is continuing from the previous Sales. Although impacts related to oil spills from the proposal would be eliminated, the continued importation of oil via tankers is expected to result in spills.

Realization of economic or national security benefits resulting from the estimated oil and gas resources would be foregone unless tracts from this Sale were incorporated into a future Sale. Cancelling the Sale would also eliminate all regional increases in economic activity expected to occur as a result of the proposal. The jobs and foregone increases in gross regional product represent a less than 1 percent increase over baseline projections. However, possible stress on communities associated with the Sale-related population growth would not occur if the Sale were cancelled.

7. Alternative 7 - Delay the Sale

a. Description of the Alternative: If the alternative of delaying the Sale is chosen, tracts would be withheld from a Sale offering for a period of time. The period of delay would be governed by the reason for not leasing at the present time. A decision to delay the Sale could be made for any number of reasons (for example, to allow completion of further environmental studies, to allow advancement of deep water technology, or to allow further State and local onshore planning for anticipated effects from offshore oil and gas activities).

b. Summary of Impacts: Postponement of the Sale would result in delay in the exploration, development, and production of Proposed Sale No. 68 oil and gas resources. Any economic or national security benefits which could be attributed to the domestic production of hydrocarbons in these amounts would be postponed.

A delay of the Sale may not change any of the impacts assumed to occur under Alternative 1; it would most likely postpone their occurrence. However, improvements may occur in technologies for oil spill prevention and recovery, deep water drilling, or for exploration and production in hostile environments which may lessen the risk of some adverse impacts. Also, new information on oil and gas resources may become available from drilling on adjacent existing leases and the economic feasibility of developing an area probably will improve. Delaying the Sale also would allow more time to assess the cumulative impacts from previous leasing, exploration, and development in the area and to determine appropriate mitigation measures.

Another reason for delay could be to obtain more environmental information from ongoing or future studies since enhanced knowledge of the environment and effects of OCS activities might enable better management and regulation of OCS operations. However, without a delay of Sale, the studies information will, nevertheless, become available later in the leasing cycle and will be used in evaluating exploration strategies and in developing production plans. For information on studies applicable to Southern California see Section I.B.4.

8. Other Alternatives: The purpose of this subsection is to emphasize that the Secretary can choose any combination or partial combination of tracts discussed in the preceding alternatives. For example, the Secretary might choose to delay leasing tracts within the marine sanctuary, but offer the remainder as proposed. The alternatives previously discussed are not intended to represent all possible alternatives to the proposed action.

9. Alternative Energy

a. Energy Sources: It is anticipated that the oil and gas that would become available from this proposal in the next 25-year period could provide a significant contribution to the nation's energy supply; if the subject Sale were cancelled, the following energy actions or sources might be used as substitutes:

- (1) Energy conservation
- (2) Onshore oil and gas supplies
- (3) Coal
- (4) Nuclear power
- (5) Oil shale
- (6) Hydroelectric power
- (7) Solar energy
- (8) Oil imports
- (9) Natural gas imports
- (10) Liquified natural gas imports
- (11) Geothermal energy
- (12) Synthetic fuels
- (13) Bioconversion
- (14) Other energy sources
- (15) Combination of alternatives

Based upon the range of undiscovered resource estimates by the USGS for the proposed Sale area, Table II.B.9-1 presents the energy equivalents which could be required for other energy sources to substitute for this proposed action.

This section briefly discusses the above listed alternative energy sources. For more detailed information on each of these energy sources and environmental impacts associated with their use and/or development, refer to the following: Energy Alternatives: A Comparative Analysis, (Univ. of Oklahoma, 1975) prepared for BLM by The Science and Public Policy Program of the University of Oklahoma, and FEISs for OCS Lease Sales 35, 48, 53, and 71.

(1) Energy Conservation - Vigorous energy conservation is an alternative that warrants serious consideration. The Project Independence Report of the Federal Energy Administration claims that energy conservation alone can reduce energy demand growth by 0.7 to 1.2 percent depending on the world price of oil.

The residential and commercial sectors of the economy are often characterized as inefficient energy consumers. Excessive consumption is also evident in the industrial sector. Estimated energy savings of between 10 and 30 percent may be available in these sectors of the economy through conservation.

Transportation of people and goods accounts for approximately 25 percent of nationwide energy use. Using short- and mid-term conservation measures such as consumer education, lower speed limits, rate and service improvements on public transit, and rail freight transit, energy savings of 15 to 25 percent might be achieved.

TABLE II.B.9-1

ENERGY NEEDED FROM OTHER SOURCES TO REPLACE ANTICIPATED
OIL AND GAS PRODUCTION FROM PROPOSED OCS SALE 68

Anticipated Crude Oil Production (Total Risked Mean)	121 million barrels
Anticipated Natural Gas Production (Total Risked Mean)	280 billion cubic feet
Crude Oil Btu Equivalent	677.6×10^{12} Btu ^a
Natural Gas Btu Equivalent	285.9×10^{12} Btu ^b
Total Oil and Gas Btu Equivalent	963.5×10^{12} Btu
Total Oil Import Equivalent	172 million barrels
Total Gas Import Equivalent	944 billion cubic feet
Coal Import Equivalent	40.15 million tons ^c
Coal Gasification (Number Low Btu Plants)	0.24 plants ^d
Oil Shale Equivalent	245.8 million tons ^e
Nuclear Capacity (Number Light Water Reactors 1000 MWe Capacity)	0.73 plants ^f
Total Fuel Loads (Uranium Dioxide)	197.86 tons ^g
Hydroelectric Facilities (200 MWe Capacity)	36.5 plants
Geothermal Facilities (100 MWe Capacity)	73 plants
Solar Energy (Collector Size at 10% Efficiency)	26.1 square miles

^a Assuming one barrel of oil equals 5.6 million Btu.

^b Assuming one cubic foot of natural gas equals 1,021 Btu.

^c Assuming one ton of coal equals 24 million Btu.

^d Assuming Koppers-Totzek processing requiring 10,570 tons/day of coal for an output of 250 billion Btu's/day. Also assumes coal of 8,780 Btu's per pound.

^e Assuming high grade shale recovery of 0.7 barrels per ton of oil shale.

^f One kilowatt-hour equals 3,412 Btu at a theoretical conversion rate of other energy forms to electricity at 100% efficiency. Capacity is calculated assuming an 80% plant factor and 33% efficiency of fossil fuel electricity generation.

^g Assuming 30 metric tons enriched U_{30} first core fuels, and 10 metric tons enriched U_{30} annual reloads with plutonium recycle for each normalized 1,000 MW(e) light water reactor.

Significant energy savings are clearly possible through accelerated conservation efforts. The Project Independence Report estimates that conservation alone could result in a 2.2 million barrel per day reduction in petroleum demand by 1985. The environmental impacts of a vigorous energy conservation program will be primarily beneficial. The exact nature and magnitude of these impacts will depend on whether there is a net reduction in energy use or whether the reduction is accomplished through technological change and substitutions.

(2) Onshore Oil and Gas Supplies - Large quantities of oil and gas still remain in the United States. The U.S. Geological Survey (1981) estimates that onshore, undiscovered, recoverable oil resources ranged from 41.7 billion barrels with a 95 percent probability and 71.0 billion barrels with a 5 percent probability. The total onshore and offshore undiscovered recoverable oil resource for the U.S. are 64.3 billion barrels with a 95 percent probability and 105.1 billion barrels with a 5 percent probability. Despite the magnitude of reserves, domestic oil production is likely to continue to decline from its peak production rate attained in 1970.

In 1977, approximately 20 percent of domestic natural gas was derived from oil production. The Department of Energy (1977) in its annual report to Congress estimated that there are 723 trillion cubic feet of natural gas reserves and resources in the United States. The development of new reserves required to meet gas demand will depend on continued development of onshore areas and of commercially viable nuclear stimulation or massive hydraulic fracturing to produce natural gas from low permeability reservoirs. The removal of crude oil price controls is expected to stimulate utilization of secondary and tertiary recovery techniques (EOR-enhanced oil recovery) and production development of previously uneconomic fields.

This alternative would entail environmental impacts such as land subsidence, increased erosion, loss of vegetative cover and wildlife habitat, increased air pollution, and disruption of existing land use patterns. Equipment failure, human error, and blowouts may also impair environmental quality. Water produced from EOR techniques, older well failures, and oil spills could result in ground and surface water pollution.

The magnitude of these impacts would depend on whether the increased production resulted from improved recovery methods or new discoveries. If improved recovery is realized, the impacts will likely be of lesser significance and will occur in already developed areas. Should new discoveries be found, the impact will be more significant and disruptive, as a whole new infrastructure would have to be built from the ground up.

(3) Coal - Coal is the most abundant energy resource in the United States. Coal deposits underlying nearly 460,000 square miles in 37 States constitute one-quarter of the known world supply and account for 80 percent of our proven fuel reserves. Identified coal resources contain 125 times the energy consumed in the U.S. in 1970.

To replace the energy expected to be realized from the proposed Southern California sale, 40 million tons of coal would be necessary. Though domestic reserves could easily provide this quantity, serious limitations to coal development exist.

If an alternative to Proposed Sale No. 68 is greater reliance on coal, it may be expected that mining would increase in western states to provide the necessary fuel source.

Combustion of coal results in various emissions, notably SO₂ and particulates. If the expected production from this Sale is replaced by coal, there will be an increase in these pollutants, especially if coal is substituted for the natural gas presently used.

The five major coal transportation systems (road, rail, water, conveyor, and pipeline) all have some adverse environmental impacts. These include water, air and noise pollution, safety, land use, disposal and reclamation of slurry water and spoil piles, and aesthetics.

Technology for conversion of coal into gaseous and liquid hydrocarbons has been established for several decades and a number of relatively low-capacity commercial plants exist in various parts of the world. However, few cost-effective advanced technologies have progressed beyond the pilot plant stage.

Numerous problems remain before commercial development of synthetic fuels from coal can proceed. The cost effectiveness of synthetic fuels from coal will depend on prices of other fuels, primarily oil and natural gas.

(4) Nuclear Power - The predominant nuclear system used in the United States is the uranium dioxide fueled, light water moderated and cooled nuclear power plant. Research and development is being directed toward other types of reactors, notably the breeder reactor and fusion reactors.

Although nuclear plants do not emit particulates or gaseous pollutants from combustion, the potential for serious environmental problems exists. Some airborne and liquid radioactive materials are released to the environment during normal operation. The amounts released are very small and potential exposure has been shown to be less than the average level of natural radiation exposure. The plants are designed and operated in such a way that the probability of harmful radioactivity released from accidents is very low.

This has been demonstrated in Pennsylvania where the Three-Mile Island Power Plant has been shut down since 1979 due to an accident inside the containment structure. However, even though harmful radioactivity has not been released, and the area has not had to be evacuated, there has been a large increase in public concern for the safety of these power plants, and attempts have been made to stop all future construction, and to shut down all existing nuclear plants. Dependence on this power source in some areas tends to preclude shut down as no suitable alternative is available. Nuclear power is supplying about 10 percent of commercial electricity in the U.S. There has been a sharp decline in new plant orders over the past few years, primarily due to the increased plant costs, tighter regulations, and increased public opposition.

Nuclear plants use essentially the same cooling process as fossil-fuel plants and thus share the problem of heat dissipation from cooling water. However, light water reactors require larger amounts of cooling water and discharge greater amounts of waste heat to the water than comparably sized fossil-fuel plants. The effects of thermal discharges may be beneficial in some though not all cases. Adverse effects can often be mitigated by use of cooling ponds or cooling towers.

Low level radioactive wastes from normal operation of a nuclear plant must be collected, placed in protective containers, and shipped to a Federally-licensed storage site and buried. High level wastes created within the fuel elements remain there until the fuel elements are processed. Currently, spent fuel is stored at NRC-licensed facilities. Plans call for recovering unused fuels at reprocessing plants, solidifying the wastes, and placing them in storage at a Federal Repository.

There are also impacts on land, water, and air quality arising from the mining of uranium ores. Dwindling amounts of high grade reserves will increase the amounts of land mined for lower grade radioactive ores, primarily in western states. The mining operations impacts will be similar to coal, but the nature and distribution of the deposits mean relatively smaller impact while radioactive tailings cause unusual problems for disposal, the environment, and human health.

(5) Oil Shale - Large areas of the United States are known to contain oil shale deposits with those in the Green River formation in Colorado, Wyoming, and Utah having the greatest commercial potential. The oil shale resources of the Green River formation are estimated at 1,781 billion barrels, of which 129 billion barrels are classes one and two resources, 186 billion barrels are class three resources, and 1,466 billion barrels are class four resources.^a

To substitute the energy equivalent estimated to be produced from this proposed sale, 246 million tons of oil shale would have to be mined and processed.

Oil shale development poses serious environmental problems. With surface or conventional underground mining, it is very difficult to dispose of the huge quantities of spent shale, which occupy a larger volume than before the oil was extracted. Inducing revegetation in an area of oil shale development is difficult and may take more than ten years. In-place processing avoids many of these environmental hazards. The spent shale problem is much less severe with underground processing.

^aU.S. Energy Outlook, National Petroleum Council, Washington, .D.C, 1972, pp. 207-208. Classes one and two deposits are at least 30 feet thick and average 30 gallons of oil per ton of shale, and include only the most accessible and better defined deposits. Class three deposits are as rich as classes one and two but more poorly defined and less favorably located. Class four deposits are lower grade, poorly defined deposits ranging down to 15 gallons of oil per ton of shale.

However, the processing (retorting) operations consume large quantities of water and generate large amounts of waste water. The waste water must be treated and can be reused in the processes. It has been assumed that water pollution will not be a problem outside the complex. However, the limited availability of input water in the development area could lead to resource use conflicts.

(6) Hydroelectric Power - Hydropower is energy from falling water, which is used to drive turbines and thus produce electricity. Conventional hydroelectric developments convert the energy of natural regulated stream flows falling from a height to produce electric power. Pumped storage projects generate electric power by releasing water from an upper to a lower storage pool and then pumping the water back to the upper pool for repeated use. A pumped storage project consumes more energy than it generates but converts offpeak, low value energy to high value peak energy.

Many of the major hydroelectric sites operating today were developed in the early 1950's. Thirty to forty years ago hydroelectric plants supplied as much as 30 percent of the electricity produced in the United States. Although hydroplant production has steadily increased, thermal-electric plant production has increased at a faster rate.

The undeveloped potential for hydroelectric generation is about 93,000 MW in the lower 48 states and about 32,000 MW in Alaska. However, it is likely that hydroelectric power will continue to represent a declining percentage of the total U.S. energy mix due to high capital costs, seasonal variations in waterflows, land use conflicts, environmental effects, water use, and flood control constraints. Sites with the greatest production capacity and lowest development costs have already been exploited.

Construction of a hydroelectric dam represents an irreversible commitment of the land resource beneath the dam and lake. Flooding eliminates wildlife habitat and prevents other uses such as agriculture, mining, and free-flowing river recreation. This is an economic cost which can greatly exceed the cost of the dam itself as was seen by one small hydroelectric facility in Pennsylvania which cost \$15 million in 1971 for the dam, but relocation and property adjustment costs added \$100 million to the cost of the project. This does not include the lost value of the wildlife habitat, the crops which could have grown, or the recreational activity in the natural environment. However, recreation will continue in the form of boating after the facility is completed.

(7) Solar Energy - Applications of solar energy must take into account the following:

- Solar energy is a diffuse, low intensity source.
- Its intensity is continuously variable with time of day, weather, and season.
- Its availability differs widely between geographic areas.

The total solar energy intercepted by the earth is 5.9×10^{17} Btu per hour. This is reduced by the atmosphere to approximately 2.7×10^{17} Btu per hour which gives an average intensity of 1450 Btu per square foot per day. This energy, although free, requires conversion to a suitable form. The major constraint on conversion, is the size of the collector required, due to the low efficiency of photovoltaic generators (5-20%). The large required collector area, at present, precludes commercial operation. A 1980 study by Jet Propulsion Laboratories shows that 52.7 percent of the electricity consumed in the San Fernando Valley could be produced by utilizing half of flat or south facing roofs in the area for photovoltaic collection. However, the cost of photovoltaic cells, \$65 to \$135 per square foot, makes this type of project uneconomic.

Another method of utilizing solar power is solar thermal, where the sun's rays are directed by mirrors to a central point, and are then capable of being used as the heating source for a thermal power plant. Southern California Edison is using this concept in their experimental solar plant near Barstow. This plant will be on line in 1982, and will have an output of 10 megawatts.

Currently, the most prevalent use of solar power, both in active and passive systems, is in space and water heating in residential and commercial buildings. Some jurisdictions require solar energy concepts to be utilized in all new construction, and more industries are utilizing solar energy as a supplemental energy source.

Solar energy also includes wind energy and ocean thermal energy. Of these, wind energy conversion is presently being utilized in small scale operations with utility companies having test sites at various locations. These units are dependent on the wind, and as such provide an intermittent power source with a maximum energy recovery efficiency of 40 percent. The estimated power output of a wind grid system is 40 MWe per square mile, and as such a total area of 182.5 square miles would be required to replace the energy from this proposed sale.

Ocean thermal energy is still in the experimental development stage, although the Department of Energy estimates that by the year 2000 ocean thermal energy conversion could replace 400,000 barrels of oil a day, equivalent to a power generation of 93 MWe. This system has been successfully tested on a small scale off Hawaii.

(8) Oil Imports - U.S. reliance on imported oil has increased steadily in the last decade. Competition on the world market and recent cutbacks in Middle Eastern oil exports have raised concerns about availability of oil imports in the future. Declining resource availability and increasing domestic demand restrict potential imports from the Western Hemisphere nations, particularly Venezuela and Canada. Increasing imports from the Middle East brings problems of stability of supply, balance of payments, and U.S. off-loading capacity. There is increased concern over the political

situation in the Middle East. Political disruption can have a drastic effect on oil production, as has been seen in the Iranian-Iraqi war.

In addition to these problems in obtaining oil from foreign sources, one must also consider the potential impact from tanker casualties and the associated massive oil spills, which could be on par with the breakup of the TORREY CANYON or the AMOCO CADIZ.

In February, 1977, U.S. imports of petroleum and petroleum products were 7,724,000 barrels/day. This has dropped to about 6,000,000 barrels per day in March, 1981. The proposed sale would replace 0.3 percent of these imports, at the March 1981 level. This is a small decrease when compared directly to the total, but it is the equivalent to one tanker the size of the AMOCO CADIZ making delivery once a month for the expected field life.

(9) Natural Gas Imports - Imports of natural gas via pipeline have come largely from Canada, with small amounts from Mexico. In 1973, net pipeline imports from Canada were 1,028 bcf, about 4.6 percent of total natural gas used in the United States. These imports were about 33 percent of Canada's natural gas production. Natural gas pipeline imports from Mexico have not been a significant part of U.S. supply. In 1973, imports from Mexico were 1.6 bcf, then in 1978 Mexico announced plans to use all their gas internally. However, it is foreseeable that Mexico could supply about 5 percent of the U.S. gas consumption. In order to replace the expected production from the proposed sale, it would be necessary to import an additional 4.2 bcf per year through the existing sources.

As with imports of oil, California and the rest of the country could become dependent on foreign control of supply. Fluctuations of that supply could influence quality of life, productivity, and employment. American policies could also become influenced by decisions of foreign gas producers.

(10) Liquified Natural Gas Imports - The growing shortage of domestic natural gas has encouraged projects to import liquified natural gas (LNG) under long-term contract. Large scale shipping of LNG is a relatively new industry. Several LNG projects are now under consideration on the Pacific, Atlantic, and Gulf coasts.

The potential impacts of LNG imports arise from tankers, terminals, transfer, regasification facilities, and transportation of gas. The primary hazard of handling LNG is the possibility of a fire or explosion during transportation, transfer or storage.

Receiving and regasification facilities will require prime shoreline locations and dredging of channels.

As with importing oil and natural gas, the importation of LNG will put the U.S. in a more dependent position on foreign powers.

(11) Geothermal Energy - Geothermal energy is primarily heat energy from the interior of the earth. It may be generated by radioactive decay of

elements such as uranium or thorium, or by friction due to tidal or crustal plate motions.

There are four major types of geothermal systems: hot water, vapor dominated, geopressured reservoirs, and hot dry rock systems.

In addition to electricity, geothermal energy can offer a potential for space heating, industrial heating processes, and other nonelectric uses in many areas which presently are highly dependent upon oil and gas for energy needs. However, geothermal electric generating plants are smaller than conventional plants and require a greater amount of steam to generate the same amount of energy. The average output of a plant is on the order of 100 MWe, and as such there would need to be 73 plants to replace the potential energy for Proposed Sale No. 68.

A number of gases are associated with geothermal systems and may pose health and pollution problems. However, adverse air quality impacts are generally less than those associated with fossil-fuel plants. Also associated with geothermal energy systems are saline waters which must be disposed of and isolated from contact with ground water regimes.

Land related problems stem from disturbance due to construction of necessary facilities, and possible ground subsidence which, in turn, can cause structural failures and loss of groundwater storage capacity.

(12) Synthetic Fuels - Synthetic fuels and oils are primarily a product of coal liquifaction, as stated in Section II.B.9.a.3. Numerous plants for synthesis of liquid fuels have been built in various parts of the world. South Africa in 1955, built a plant with a capacity of 5 million tons per year, and an output of approximately 15 million barrels per year. Another larger plant is expected to be on line in the early 1980s, and at that point oil from coal will account for 35 to 50 percent of South Africa's total petroleum consumption. In the U.S., the process is still primarily in the development stages due to the low cost of petroleum over the past years, but interest is growing due to the increase in price of natural crude. This has been shown in 1979 when the Department of Energy allocated 11.5 percent of its budget to coal gasification and liquifaction. Synthetic fuels could replace the production of Proposed Sale No. 68, but there would be a requirement of building plants capable of handling 2.3 million tons of coal per year.

(13) Bioconversion - Bioconversion is the process of transforming biomass into usable energy. Three methods of conversion are, 1) the conversion into liquid form, 2) the conversion of organic waste into methane gas by bacterial breakdown of the biomass, and 3) the direct burning of source.

The first method mentioned is the conversion of organic matter into a liquid form, primarily alcohol. This can either be mixed with gasoline to produce gasohol, a product already in widespread use, (the State of California has converted many of its vehicles over to this power source) or the alcohol can be burned directly in the vehicles. Brazil has replaced 20 percent of its gasoline with alcohol derived from plant matter.

The second method, the use of bacteria, is already in use on small scale in the U.S. An example is the Hyperion Sewage Treatment Plant in Los Angeles which uses produced methane to run the plant, and sells the excess to a municipal electrical generating plant.

The outputs available for these methods depend upon the material used and the particular process employed. Hydrogenation of the biomass to oil produces a net yield of 1.25 barrels per ton, fermentation to produce alcohol will produce 3.7 barrels per ton of sugar, and the bacterial decay will produce an estimated 10,000 cubic feet of methane per ton of organic material. These sources could be used to replace part of the proposed output of Proposed Sale No. 68, but would require large increase in plants to replace the entire sale output.

(14) Other Energy Sources - The high cost and rapidly shrinking reserves of the traditional energy fuels have encouraged research into new and different sources for potential energy. Some of these alternate sources have been known for decades but high costs and technical problems have prevented their widespread use. They include tidal power, wave power, and organic fuels, among others.

Environmental impacts of these alternatives are difficult to assess, especially as a great amount of research and development remains to be completed before operational scale systems can be developed, tested, and evaluated for production and application.

The date of commercial availability of such alternatives will depend on the cost of the traditional energy fuels, the level of Federally subsidized research, and the solution of engineering and technical problems.

(15) Combination of Alternatives - Within California a combination of some of the most viable energy sources available to this area could be utilized to attain an energy equivalent comparable to that estimated to be produced within the 25-year field life anticipated by the proposed action. However, this combination of alternatives, in order to attain the needed energy mix peculiar to the infrastructure of this area, would have to consist of energy sources attainable now or within the 25-year timeframe that are transferable to the technology presently used, i.e., viable substitutes would have to be available for the petroleum and natural gas required by the petrochemical industrial complex, the petroleum used for the transportation sector, and the electricity and fuels used in the Southern California residential and commercial sectors.

b. Non-Energy Uses: The petrochemical industry has been virtually ignored as a use for the oil and gas production of the proposed sale. This, however, is a very important part of the economy with value of product sales on a par with those of oil refineries, and employment of approximately four times that of the oil refineries. The petrochemical industry is based on the processing of raw hydrocarbons to form olefins and aromatics, which allow the manufacture of intermediary products in the formation of various petrochemicals and polymers. These polymers which include plastics such as polyethylene, polypropylene, and polyvinyl chloride, as well as polyester

and acrylic fiber are used as with the petrochemicals, to make a wide variety of products, including paint, carpeting, upholstery materials, textiles, rubber, molded and extruded plastic products, fertilizers, medicinal salves, creams and ointments, soaps, and various waxes, and countless other products.

If the proposed sale is canceled, in addition to finding alternative energy sources, there will also be a great need to find alternative sources for the production of the petrochemical products.

c. Summary: In the interest of clarity of presentation, this section has discussed separately each potential alternative form of energy as a possible substitute to the proposed sale. However, it is unlikely that there will ever be a single definitive choice between energy sources, or that development of one source will preclude development of others. Different energy sources will differ in their rate of development and the extent of their contribution to total U.S. energy supplies. Understanding of the extent to which they may replace or complement offshore oil and gas requires reference to the total national energy picture.

The most viable domestically available energy alternatives for the California region, technologies and economies allowing, probably would consist of the use of coal (for use in coal-fired power plants), coal gasification plants (to provide synthetic natural gas), nuclear power and solar energy (to provide energy for space heating), and oil shale processing (to provide petroleum), in addition to conventional oil and gas resources.

Of the foregoing, increased domestic oil and gas production offers considerable possibilities, although adequate incentive must exist for exploration and development.

The acceptability of oil and gas imports as an alternative is diminished by:

- The security risks inherent in placing reliance for essential energy supplies on sources which have demonstrated themselves to be politically unstable and prone to use interruption of petroleum supplies to exert economic and political pressure on their customers.
- The aggravation of unfavorable international trade and payments balances which would accompany substantial increase in oil and gas imports.
- Apparent high costs of liquefying and transporting natural gas other than overland by pipeline.

The non-energy uses of petroleum pose a greater problem in terms of finding alternative sources. Many of the petrochemicals at present have no other source than petroleum, and these would have to be synthesized from entirely different sources if oil shale replacement was not possible. Others, however, are capable of being produced from other sources such as coal.

10. Comparison of Alternatives: The proposed action to lease and, if resources are found, to develop 218 tracts, will have environmental effects approximately as follows. Water quality locally around platforms and terminals will be degraded to a minor degree. Air quality is not expected to deteriorate over the OCS or onshore to any degree considered significant. Violations of State or National standards are not anticipated. Low to moderate ecological losses can be anticipated in most subtidal and intertidal benthic communities. High ecological losses may occur to some sensitive rocky areas if hit by an oil spill. Fish resources may receive low to moderate ecological losses, particularly surface fishes. Commercial fisheries may receive temporary economic losses from oil spills, and moderate to high impacts from other impact agents. Temporary economic losses also will be incurred by the sport fishing industry. Marine mammals are expected to receive low to moderate ecological losses but there is a low probability that one species will suffer high ecological losses. Seabirds could suffer low ecological losses. Low to moderate ecological losses to endangered mammals and birds inhabiting the coastal area could occur, but jeopardy to the continued existence of the species and its habitat is not expected. The estuaries of the coastline could receive high ecological loss if hit by oil spills. The probabilities of oil entering any estuary, however, are very low. Low ecological losses to terrestrial biological resources are expected. Low to moderate ecological losses in the Channel Islands Marine Sanctuary are expected to occur although there is a potential for high ecological losses. Minor economic effects to employment, personal income, and related activity are anticipated. Some burdens on public services and facilities seem likely for Santa Barbara and Ventura Counties. Little land-use change is likely. Impact on recreation in the Sale area will be minor although at a local level impacts could be severe. Effects on transportation and port facilities are expected to be minor. Effects on military use areas of the OCS are direct, but negotiations are underway to determine how critical if any they may be to Navy and Air Force usage. Direct impacts to cultural resources are expected to be low in number and degree. A visual degradation of the shoreline can be expected for the lifetime of field development.

Alternative 2 (delete 37 tracts or portions) would produce essentially the same potential impacts described above except for the Channel Islands area. The marine sanctuary would be placed at lower risk. Deletion of the 13 complete and 24 partial tracts within the sanctuary would result in a significant though unquantifiable reduction in potential impacts to intertidal and subtidal benthic organisms, and could result in a slight reduction in potential impacts to most other resources.

Alternative 3 (delete 8 tracts or portions) would produce essentially the same potential impacts as Alternative 1 except for the area near the adjunct to the Santa Barbara Channel Ecological Preserve. The deletion of these tracts would result in slight reductions to potential impacts to intertidal communities, fish, commercial and sport fisheries, seabirds, harbor seals, Goleta Slough Estuary, Channel Islands National Marine Sanctuary, socio-economics, transportation, archaeological resources and visual resources.

Alternative 4 (delete 12 tracts) would produce essentially the same potential impacts as Alternative 1 except near Santa Monica Bay. The deletion of these

tracts would result in a moderate reduction in potential socio-economic impacts to recreational areas in Santa Monica Bay and on Santa Catalina Island since these areas will have a reduction in probable oil spill impacts. A slight reduction in potential impacts to water quality, intertidal and subtidal bottom organisms, marine mammals, seabirds, fish and fisheries also would result.

Alternative 5 (delete 1 tract) would result in a slight reduction in potential impacts caused by routing conflicts within the USCG proposed reconfiguration of the Precautionary Area, and slight reductions in impacts to other resources described in Alternative 1.

Alternative 6 (cancel the Sale) would pose no risk to any environmental concerns or resources associated with the area. It could, however, pose continuation of adverse economic effects due to our continued dependence upon imported oil and gas. Also, environmental effects from substitute domestic resources like coal could be exacerbated in other regions.

Alternative 7 (delay the Sale) would only postpone exploration, development, and production. The effect primarily would be to move forward in time the same associated environmental impacts described previously for Alternative 1. However, improvements may occur in technologies for oil spill prevention and recovery, deep water drilling, or exploration and production in hostile environments which may lessen the risk of some adverse impacts. Also, new information may become available from studies or drilling on adjacent existing leases, and the economic feasibility of developing an area probably will improve. Delaying the Sale also would allow more time to assess the cumulative impacts from previous leasing, exploration, and development in the area and to determine appropriate mitigation measures. Economic and National security benefits associated with the proposal would likewise be postponed.

CHAPTER III

III. AFFECTED ENVIRONMENT

A. Physical Environment

1. Geology

a. Geologic Description: Tracts recommended for inclusion in Proposed Sale No. 68 lie in the offshore portion of the structurally complex part of Southern California that includes the western Transverse Range province and the northern Peninsular Range province. The offshore portion of this latter region, characterized by the highly irregular topography of basins and ridges, is commonly referred to as the Southern California continental borderland. The northern Channel Islands are along the boundary between the two physiographic provinces.

The Santa Barbara basin, a tectonic depression that forms western extension of the onshore Ventura basin, is the submerged southwestern part of the Transverse Range province (Vedder, et al., 1969). This trend is commonly referred to as the Santa Barbara Channel. The Channel extends 130 km along its east-west axis and is 40 km wide. Maximum water depth in the Channel is about 625 m.

The characteristic west-trending structural grain of the Transverse Range province (transverse to the distinct north-northwest structural grain of California) is reflected in the major structures within the Santa Barbara basin (Figure III.A.1.a-1). The major structures in the Santa Barbara Channel region are east-west oriented folds and faults. Exemplifying these are the Rincon trend, the Santa Ynez, Pitas Point, and Oak Ridge faults, and the Santa Rosa Island/ Santa Cruz Island/Malibu Coast fault zone, which marks the southern boundary of the basin. This structural grain may be superimposed on a northwest trend in older, buried structures (Howell, et al., 1978).

The basin floor is composed of Quaternary sediments, as much as 2000 m thick, that are gently folded and faulted in most areas but are undefined in many others (Curran, et al., 1971; Vedder, et al., 1974). The shelves and slopes of the basin, although barren of sediment in places, are generally mantled by a very thin layer of sediment. Bottom sediments in the central part of the basin are predominantly mud.

Below the Quaternary-aged basin fill are more than 15,000 m of highly folded and faulted Tertiary and Cretaceous strata (Figure III.A.1.a-2; Vedder, et al., 1969).

The area south of the Channel Islands, the Southern California continental borderland, forms the north and west offshore extension of the Peninsular Range province. This area is characterized by a series of complexly folded and faulted north-northwest-trending ridges and basins that parallel the structural grain of the onshore Peninsular Range province. The basins are under water depths of 400-2000 m, whereas water depths above the flat-topped ridges and coastal shelves are usually less than 150 m.

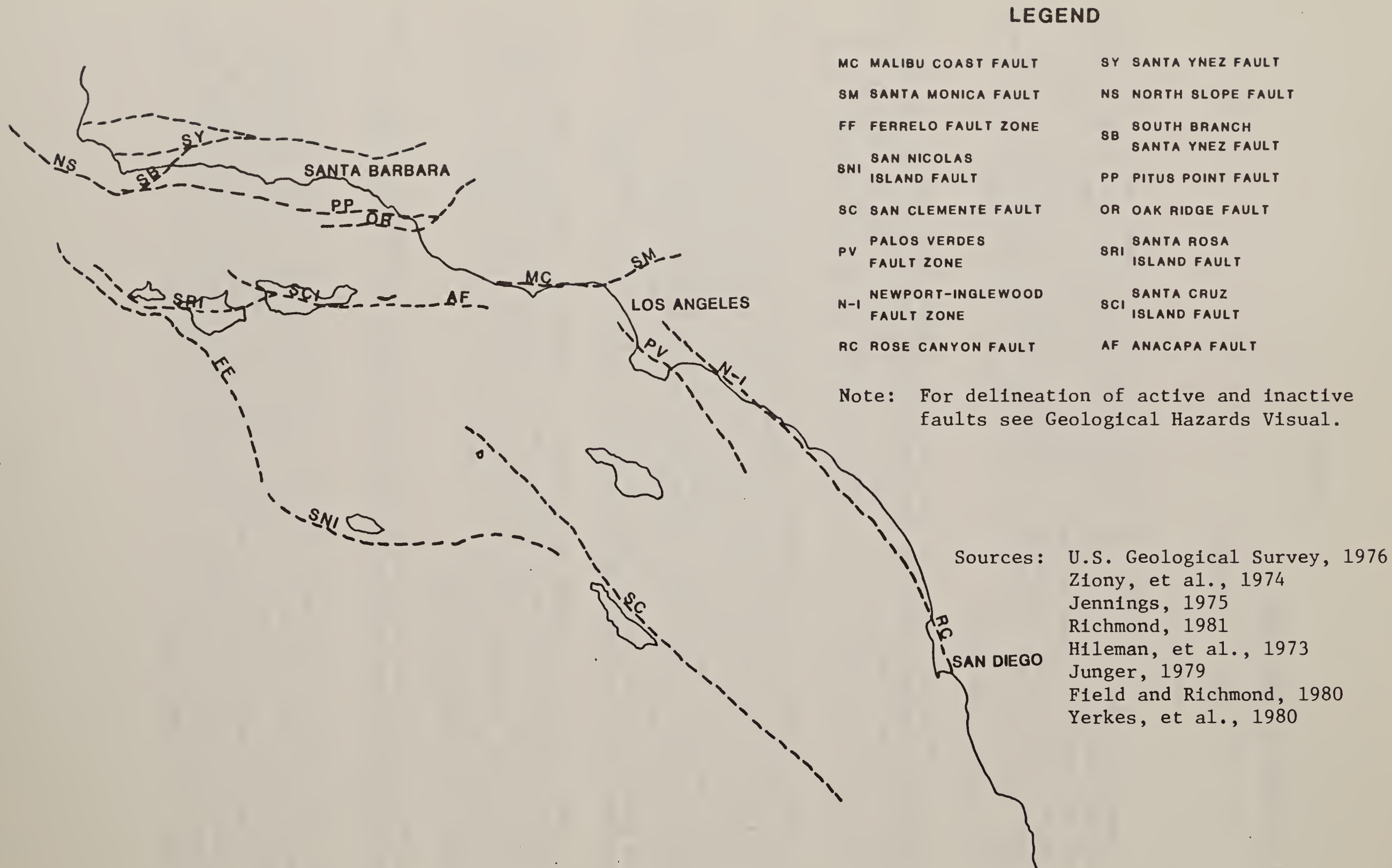


Figure III.A.1.a-1 Index Map of the Southern California Continental Borderland Showing Locations of Faults

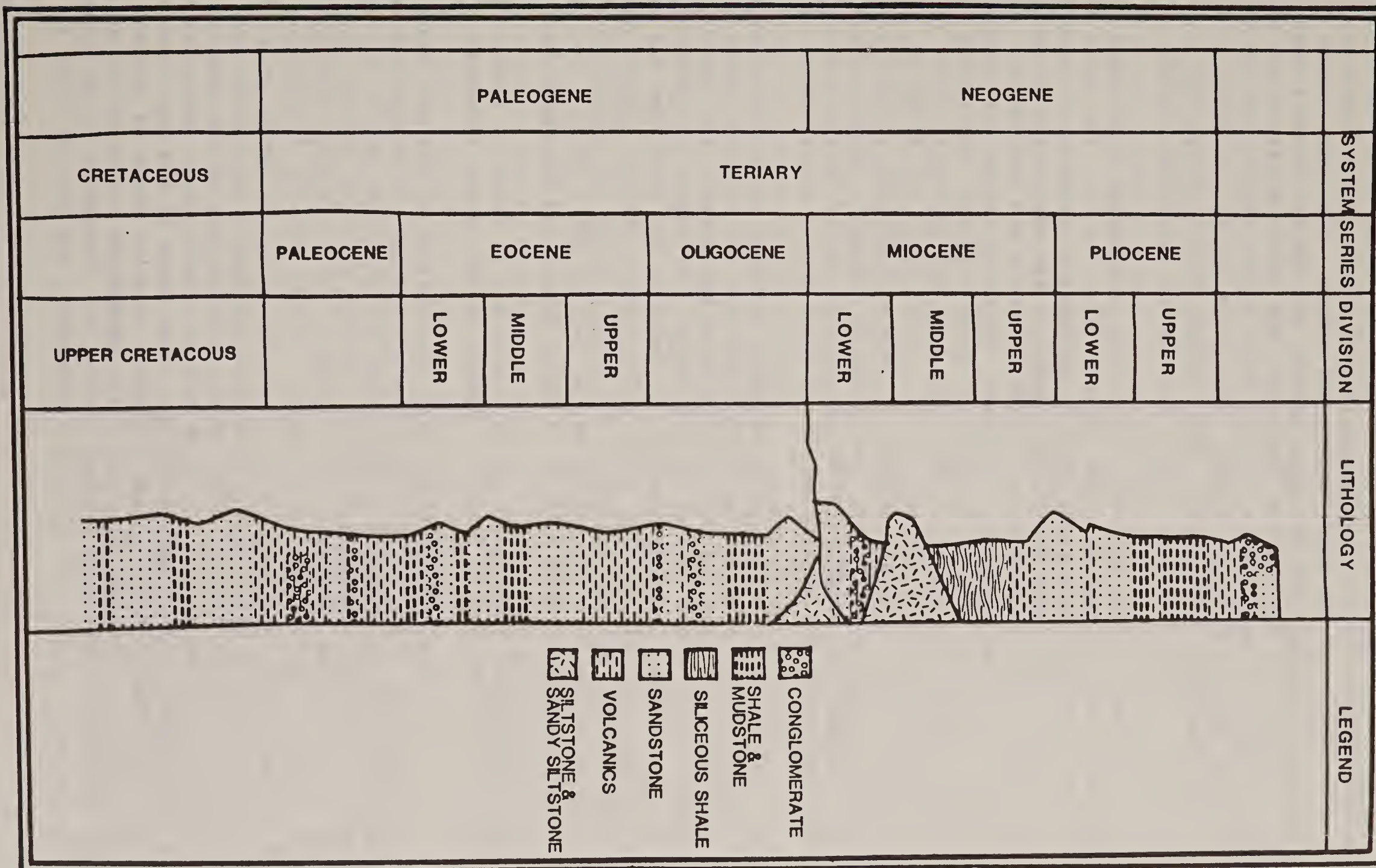


Figure III.A.1.a-2 Generalized Stratigraphic Column for Proposed Sale No. 68 Area

The Southern California continental borderland may be divided into the inner basins and ridges, and the outer basins and ridges. The inner basins are the Santa Monica, San Pedro, and Catalina basins, and the San Diego trough. Two of them, Santa Monica Bay and San Pedro Bay, are offshore extensions of the Los Angeles basin. Inner ridges are the Palos Verdes uplift and the Santa Cruz-Catalina and San Clemente Ridges. The outer basins are Santa Cruz, San Nicolas, San Clemente, East Cortes, West Cortes, Velero, Long, Tanner, and Patton basins. Outer ridges are Santa Rosa-Cortes and Patton Ridges.

Rocks and sediments in the Southern California continental borderland range in age from Cretaceous through Holocene (Figure III.A.1.a-2). The outer ridges are uplifts of pre-Tertiary rocks with an on-lapping sequence of Neogene sandstone and shale. The Santa Rosa-Cortes Ridge is the expression of up-folded Paleogene and Cretaceous deep-water trough sediments and turbidites. The outer ridges are sites of erosion, whereas, the outer basins are sites of deposition. Sediments of late Tertiary to Quaternary age, consisting of sand, mud, or shell hash, are sparse on the ridge tops and generally occur in isolated pockets 5-20 m thick (Greene, et al., 1975; Field and Richmond, 1980). The westernmost basins contain as much as 3000 m of Neogene sediments. The basins adjoining the Santa Rosa-Cortes Ridge on the east, contain thick sections of Paleogene and Neogene sediments, as well as Mid-Tertiary volcanics. Quaternary sediments are as much as 1200 m thick in the outer basins.

The inner ridges are comprised of metamorphic basement rocks (Catalina schist) that are intruded and overlain by Neogene plutonic and volcanic rocks (Howell, et al., 1978). Overlying and buttressing these metamorphic and igneous units are Neogene clastic rocks (sandstone and shale). Paleogene or Cretaceous siltstone, sandstone, and conglomerate are found at the southeast end of Santa Catalina Island (Howell, et al., 1978). The coastal shelves consist mainly of tightly folded late Neogene sandstone and shale. Along the coastal shelves, Quaternary sands and muds are extensive, as much as 200 m thick. Correlative deposits are as much as 2000 m thick in Santa Monica and San Pedro basins.

A detailed geological summary of the Sale area may be found in Vedder, et al., 1980, U.S. Geological Survey Open-File Report 80-198, pages 1 through 28.

b. Geohazards (General): Instability of the sea floor, whether from seismic activity or sedimentary processes, is recognized as the principal hazard to emplacement of platforms and pipelines in the marine environment. Hazards related directly to seismic activity include ground shaking, fault rupture, generation of tsunamis, and earthquake-induced ground failures such as liquefaction and slumping. Faults showing displacement of either the sea floor or young (less than 11,000 years) sediments as well as those associated with historical earthquakes are considered active and, therefore, potentially hazardous to development. Instability of the sea floor can also result from dynamic (e.g., wave surge) and static (e.g., gravity) forces acting independently of seismic activity. Some areas of the sea floor are prone to mass movement (e.g., slumps, slides) or other forms of sediment transport (flows, creep, or current scour). Submarine canyon walls and steep slopes, especially those with sediment cover, are considered to be hazardous. Oil and gas seeps, while not inherently hazardous, may provide clues to the

location of fractured reservoir rocks and shallow over-pressured gas pockets that can pose a danger to drilling operations.

Hazards, as discussed above, pose a danger to pipelines (onshore and offshore), platforms, refineries and other oil and gas development support facilities. The conditions and processes of greatest concern are those that could result in a large oil spill and the attendant conditions that could delay control and cleanup or make them ineffective. The potential for damage from different kinds of natural events varies from area to area; thus, it is not possible to specify all possible conditions when dealing with geologic hazards and seismic conditions on a regional scale.

The geological hazards stipulation is summarized in Section I.B.6.c. This stipulation provides a site-specific technique to mitigate geological hazards.

Seismicity and Faulting. High seismicity characterizes all of the California coastal region. Earthquakes in the Borderland have been monitored since the 1920s. More than 20 earthquakes of magnitude 6.0 or greater have occurred in Southern California since 1912. The largest earthquake centered in offshore Southern California, magnitude 7.3, occurred west of Point Arguello in 1927 (Hamilton, et al., 1969). Epicenters of the major earthquakes in Southern California during 1900-1974 are plotted on the Geological Hazards Visual, which shows events greater than or equal to magnitude 4. Seismic activity is continually monitored and reported by various facilities such as California Institute of Technology. An example of this monitoring is the reporting of two earthquakes greater than magnitude 4 which have occurred in the Santa Monica Bay since 1974. Both of these occurred in the same year, 1979, and due south of Malibu Point. One was centered $5\frac{1}{4}$ miles offshore and had a magnitude of 5.0. The other was centered $7\frac{1}{2}$ miles offshore and had 4.2 magnitude. Because Tanner and Cortes Banks lie beyond the limits of the seismographic network, there are no reliable epicenter data.

Offshore Southern California is cut by numerous faults, many of which are identified as active (Geological Hazards Visual; Figure III.A.1.a-1).

In the Channel Islands area, the Santa Rosa Island, Santa Cruz Island, and Malibu Coast faults and their eastern extensions form a complex zone in which reverse slip accompanied by left-lateral strike slip has occurred throughout the Quaternary (U.S. Geological Survey, 1976). In the Southern California Continental Borderland to the south, the predominant fault trend is northwest, and several lines of evidence suggest that right-lateral strike slip predominates.

Four major active fault zones transect the inner basin and ridge area; these are the Palos Verdes, Malibu Coast, Newport-Inglewood, and Rose Canyon fault zones (Figure III.A.1.a-1). Many smaller faults associated with these zones may be active (Ziony, et al., 1974; Jennings, 1975; Richmond, et al., 1981). The most significant of these faults are the Palos Verdes and Newport-Inglewood fault zones. Faults in these zones show large vertical and horizontal displacements and have long histories of seismic activity that extend to the present time.

The longest Quaternary fault mapped in the inner basin and ridge area is the San Clemente fault extending more than 100 km. Several earthquakes have been reported in the vicinity of this fault (Hileman, et al., 1973).

Two major fault zones transect the outer basin and ridge area; these are the Ferrelo and "San Nicolas" fault zones (Figure III.A.1.a-1). The Ferrelo fault zone along the west flank of the northern Santa Rosa-Cortes Ridge may extend as far south as Cortes Bank and offsets Quaternary sediments and the seafloor along most of its length (Junger, 1979; Field and Richmond, 1980). The "San Nicolas" fault zone, along the south flank of the San Nicolas Island platform is not well known but shows some sea-floor offsets along its western extension. In the Tanner-Cortes Banks area, many faults displace either Holocene sediment or the sea-floor (Richmond, et al., 1981).

In the Santa Barbara Channel region, major faults include the South Branch Santa Ynez, Pitas Point, Oak Ridge, "northern Santa Barbara slope," Santa Cruz Island, and Santa Rosa Island faults (Figure III.A.1.a-1). Several of these faults are considered capable of generating large magnitude earthquakes (U.S. Geological Survey, 1976; Yerkes and others, 1980).

Sea-Floor Instability. Evidence of sediment failure resulting in downslope mass movement (slump, slides, and creep) is common throughout the Borderland (Geological Hazards Visual). Other forms of failure (for example, liquefaction) are difficult to detect and it has not been possible to determine their prevalence. Many conditions giving rise to sea-floor instability are characteristic of the Borderland; among these are localized thick accumulations of unconsolidated, water-saturated sediment, steep slopes, and seismic and storm activity (Field and Edwards, 1980).

In the Santa Barbara Channel, submarine slumps and slides are most common along the northern slope, especially between Point Conception and Goleta Point, but are present locally along basin slopes and canyon walls throughout the area (Geological Hazards Visual; U.S. Geological Survey, 1976; Richmond, et al., 1981). In addition, buried disturbed strata suggestive of past submarine sliding have been noted in seismic profiles across the base of the Channel Islands platform (U.S. Geological Survey, 1976). Farther south along the mainland shelf, prominent submarine slumps are present in Hueneme Canyon, along the slope seaward of the Oxnard Shelf, in Santa Monica Canyon, on the slope seaward of Point Fermin (San Pedro shelf), and along the east slope of the San Diego Trough (Geological Hazards Visual; Greene, et al., 1975; Greene, 1976; Field and Edwards, 1980; Richmond, et al., 1981).

Evidence of sea-floor failure is common on slopes in the outer Borderland (Geological Hazards Visual). Slump deposits have been identified along the northern Santa Rosa-Cortes Ridge, east of San Nicolas Island, and on the flanks of Tanner and Cortes Banks, and in the Santa Cruz Basin (Greene, et al., 1975; Field, et al., 1977; Field and Richmond, 1980; Field and Edwards, 1980). These slumps range in size from tens of meters to as much as 9 km on a side and are found on mid- to lower-slopes at water depths of 500 to 1000 m. The location of related scarps and thickness of these deposits (<50 m) suggest that most of these failures occurred at the shelf (or ridge) edge or on the upper slope. The relative importance of earthquakes, gravitational loading,

and dynamic loading from storm waves in triggering these and other sea-floor failures in the Borderland is not known.

Oil and Gas Seeps. Most documented natural hydrocarbon seeps identified in the borderland are located in the Santa Barbara Channel and on the Santa Monica and San Pedro Shelves (Shallow Oil and Gas Visual). Seeps have been reported in the Santa Barbara Channel by Wilkinson (1971) and Fischer (1975). Fischer and Stevenson (1973) mapped more than 900 seeps in a 7-mile area off Point Conception. Fischer (1977) further tabulated over 2,000 individual seeps along the northern margin of the Santa Barbara Basin. Oil and gas seeps are present in Santa Monica and San Pedro Bays mostly along the traces of the Malibu Coast and Palos Verdes faults (Wilkinson, 1971; Greene, et al., 1975) and offshore between Point Vicente and Point Fermin (Wilkinson, 1971). Many water-column anomalies have been mapped from high-resolution geophysical data from San Pedro Bay and along the entire length of the Santa Rosa-Cortes Ridge by Greene, et al. (1975) and Richmond, et al., (1981), but have not been documented as oil or gas seeps (Shallow Oil and Gas Visual). However, the presence of hydrocarbons in sediment samples and the large number of faults in the area suggest that surface seeps may be present (Howell, et al., 1978).

A general pattern of diminishing seep activity with time (1946-1972) has been identified in the Santa Barbara Channel (Fischer and Stevenson, 1973). It is postulated that this declining seep activity may be directly related to increased production of hydrocarbons with resultant pressure declines. In localized examples, however, seep activity may actually be intensified during production due to artificial stimulation by such secondary recovery practices as repressuring of reservoirs (Fischer and Berry, 1973).

Shallow Gas. Shallow gas deposits refer to confined gas accumulations with possible abnormal pore pressures. Bright reflectors on high-resolution seismic reflection profiles, a possible indication of shallow gas in sediments, were mapped by Richmond and others (in prep.) in the tracts offered in OCS Lease Sale No. 48 (Shallow Oil and Gas Visual). These zones occur almost exclusively in Pliocene and Pleistocene rocks in the Santa Barbara Basin and along the coastal shelf from Palos Verdes to the Mexican Border. Shallow gas zones are as much as 400 sq km in area and range from 50 to 400 m below the seafloor. Possible shallow gas zones are rare on the outer ridges. Highly pressurized shallow gas zones that are penetrated during drilling operations can result in a blowout. The shallower gas zones can contribute to the instability of a section by effectively lowering the shear strength of the sediment. Shallow gas is not a documented constraint to development in Southern California.

Tsunamis. Locally generated tsunamis have been recorded along the coast between Point Conception and the Mexican Border; however, these are few in number and have not caused major damage. The largest tsunami ever reported in California followed the 1812 Santa Barbara earthquake and had wave runup of about 15 m above sea level just west of Santa Barbara (U.S. Geological Survey, 1976). The remaining tsunamis occurred in 1879 at Santa Monica and in 1925 and 1933 at Long Beach (Iida and others, 1967). The 1933 tsunami resulted from the March 10, 1933, Long Beach earthquake.

A detailed summary of the hazards in the Sale area may be found in Vedder, et al., 1980, U.S. Geological Survey Open-File Report 80-198, pages 35 through 43.

c. Non-Petroleum Mineral Resources: The most exploitable non-petroleum minerals on the Southern California OCS at present are sand and gravel and phosphorite.

The Southern California Borderland has a narrow continental shelf; but offshore ridges, troughs, and banks provide numerous additional sites for sand and gravel accumulation that are well within the working limit of existing dredges.

Vast quantities of sand blanket much of the shelf area within the Southern California Borderland. Relic deposits of gravel are present in significant amounts on the San Pedro shelf, Santa Monica shelf, and San Diego shelf west of Imperial Beach and seaward to the Coronado Escarpment. Extensive shell deposits, which could serve as a source of lime for concrete, encircle Santa Cruz, Santa Rosa, and San Miguel Islands. Estimates show approximately 20 to 120 million cubic meters of gravel, 64 to 320 million cubic meters of coarse sand, 880 to 4400 million cubic meters of medium sand, and 160 to 820 million cubic meters of shell on the mainland shelf from Point Conception to the United States-Mexican Border and on the northern shelf areas of Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands.

Another vast sand resource is the <95 percent-pure calcium carbonate sands occurring on the Cortes Bank, in the Southern California Outer Channel Islands area, where the bank is covered by at least a 1-to-2 meter veneer of such sand. The commercial value of carbonate sands increases exponentially with each percentage point of CaCO_3 content over 95 percent, thus the Cortes Bank material would carry a high value.

Industry has previously investigated a large gravel deposit, partly covered by fine sand, which lies near San Diego on both State and Federal OCS lands, parallel to the offshore boundary with Mexico. This deposit alone, in Federal and State waters, contains about 200 million cubic meters of gravel, a volume which may be compared with an annual consumption rate of 30 million cubic meters for the greater Los Angeles area.

Southern California marine phosphorite nodules are hard, dense masses varying in size from boulders to silts, and average 28 percent P_2O_5 . The deposits accumulate on submarine banks (e.g., Forty Mile Bank) in areas of upwelling. Water depths average over 200 meters.

Sampling of marine phosphorites of the Southern California Borderland has been primarily limited to surficial dredging of sediments and rock. Consequently, resource estimates are judged to be on the conservative side and may represent only a fraction of the actual phosphorite potential of the area. Assuming a limited deposit thickness, estimates indicate a resource of approximately 65 million metric tons of phosphate nodules and 52 million metric tons of phosphatic sand.

A detailed discussion of non-petroleum mineral resources may be found in USDI, 1975b, and USDI, 1979.

2. Physical and Chemical Oceanography

a. Physical Oceanography: Physical oceanography of the Southern California Bight previously has been discussed in detail in the Final Environmental Impact Statement for OCS Sale No. 48 (USDI, 1979, Vol. 1). CalCOFI has continued research cruises in the area accumulating more data on physical and chemical parameters and a summary of existing oceanographic data is nearing completion (NOAA/EDIS Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region, 1980). There are some data available in the above summary which indicate surface transport onshore in several parts of Southern California for some seasons as shown in Figure III.A.2-1. Although indicative, these data are sparse and lacking sufficient repetition to adequately assign probabilities to surface transport vectors. To increase the knowledge of physical oceanography, circulation studies are planned by BLM for the Santa Barbara Channel and elsewhere in California. The Coastal Ocean Dynamics Experiment (CODE) being started in northern California will involve current measurements which will add to the knowledge of nearshore processes.

Recent analyses of CalCOFI data on long-term Pacific temperature and salinity anomalies indicate that the forces driving and affecting the California currents are complex and that patterns which we see on short-term scales may not hold for longer scales. Meandering of the western edge of the California Current, incursion of warm high-salinity tropical waters into Southern California, and offshore upwelling events which are driven by distant meteorological patterns are only now being addressed. It remains to be seen whether an understanding of these large scale long-term processes will enable better nearshore short-term processes to be predicted.

b. Chemical Oceanography: Chemical oceanography of the Southern California Bight has been described in the FEIS for Sale No. 48 (USDI, 1979) and in the Sale No. 48 Reference Paper No. II (USDI, 1978a). Changes in the heavy metals and hydrocarbon burdens in the water will be discussed in the following section on water quality.

3. Water Quality: The major sources of marine pollution at present in the Southern California Bight are 28 municipal and industrial effluent discharges, surface runoff, and atmospheric deposition. The total volume of municipal wastewater discharged into the marine environment in the Bight exceeds 1×10^9 gallons each day (Table III.A.3-1). The effluent receives a variety of treatments and five of the municipal dischargers account for over 90 percent of the total volume output. Wastewater discharged from municipal outfalls contains a great diversity of potentially toxic or polluting chemicals, some of which are listed in Table III.A.3-2 for the larger outfalls in Southern California. Surface runoff, the second source of pollutants into the ocean, is variable, depending primarily on the amount of precipitation, but averaged 66.9×10^9 gallons per year for the period 1971-1972. Aerial fallout is similarly difficult to quantify accurately, but rainfall washout may account for several thousand tons of pollutants input into the Bight each year (SCCRWP, 1973).

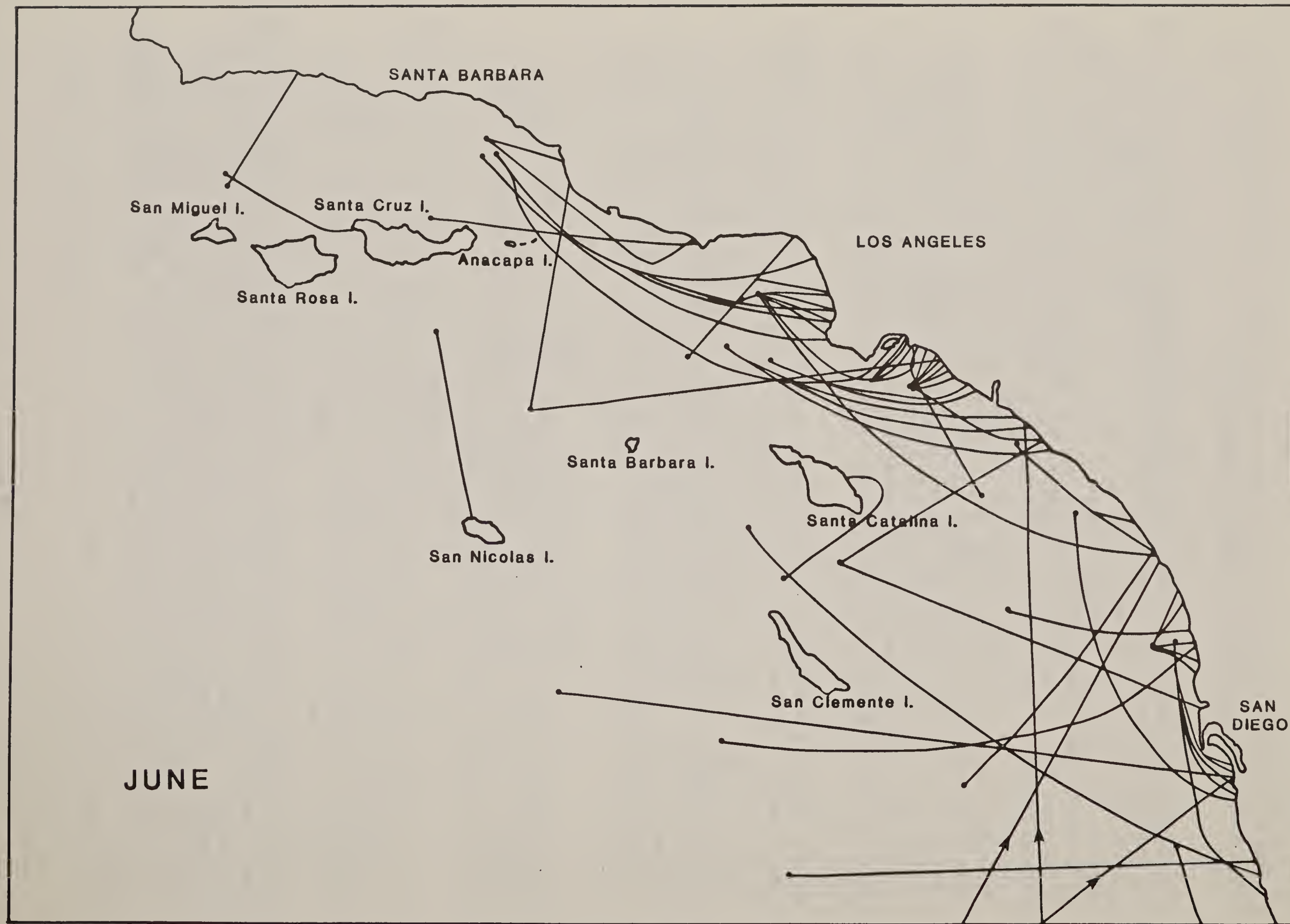


Figure III.A.2-1 Nearshore Drifter Releases for June off Southern California (NOAA, 1980)

TABLE III.A.3-1

MASS EMISSION RATES OF GENERAL CONSTITUENTS, TRACE METALS, AND CHLORINATED
HYDROCARBONS IN FINAL EFFLUENT OF MUNICIPAL WASTEWATER DISCHARGERS,
1979 (ND MEANS "NO DATA")

		Hyperion		Orange	Point	
	JWPCP	5-mile	7-mile	County	Loma	Oxnard
Flow						
gallons/year x 10 ⁹	134	129	1.6	69	47	5.9
liters/year x 10 ⁹	507	488	6.12	260	177	22.5
General constituents (metric tons/year)						
Suspended solids	93,900	36,580	43,000 ^a	36,400	25,000	2,140
BOD	103,000	70,230	ND	43,000	25,000	5,160
Oil and grease	20,200	9,270	2,450	6,760	6,490	330
NH ₃ -N	20,300	8,140	1,420	6,650	4,420	420
Organic-N	6,900	4,000	ND	ND	ND	52.0
Total-P	5,040	3,170	1,630	ND	ND	ND
MBAS	3,550	2,000	ND	ND	740	ND
Cyanide (CN)	87.2	43.9	1.10	13	0.6	0.3
Phenols	1,330	29.3	3.2	16.6	32.4	2.7
Trace metals (metric tons/year)						
Silver	9.48	21.4	4.28	2.86	4.03	0.45
Arsenic	5.07	6.34	1.35	0.78	1.67	0.11

a. Total solids

b. Based on thirty-two weekly composites and four 24-hr composites.

c. Based on two 1-week composites

Source: SCCRWP Annual Report 1970-1980

TABLE III.A.3-1 (Continued)

		Hyperion		Orange County	Point Loma	Oxnard
	JWPCP	5-mile	7-mile			
Cadmium	13.5	9.75	4.90	12.2	1.59	0.32
Chromium	130	34.1	32.6	29.6	9.51	1.24
Copper	112	92.7	53.2	75.7	23.2	2.23
Mercury	0.49	1.22	0.38	0.13	0.28	0.03
Nickel	107	78.0	20.8	36.4	12.6	1.0
Lead	73.5	73.2	29.9	28.6	16.3	2.1
Selenium	6.44	0.98	0.32	ND	ND	ND
Zinc	352	151	92	87	39	2.7
Chlorinated hydrocarbons (kg/year)						
Discharger values						
Total DDT	633 ^b	88	6	ND	35	Not reported
Total PCB	350	300	57	425	35	23
Total identifiable chlorinated hydrocarbons	1,100	420	66	430	70	23
Project values ^c						
Total DDT	633	5.9	22.4	50	17.3	0.2
Total PCB	640	58	71	673	22.3	2.3

a. Total solids.

b. Based on thirty-two weekly composites and four 24-hr composites.

c. Based on two 1-week composites.

Source: SCCRWP Annual Report 1979-1980

TABLE.III A.3-2

AVERAGE CONCENTRATIONS OF GENERAL CONSTITUENTS, TRACE METALS, AND CHLORINATED HYDROCARBONS
IN THE FINAL EFFLUENT OF MUNICIPAL WASTE DISCHARGERS, 1979 (ND MEANS "NO DATA")

	Hyperion			Orange County	Point Loma	Oxnard
	JWPCP	5-mile	7-mile			
Flow						
mgd	367	353	4.8	188	128	16.3
liters/day x 10 ⁶	1,390	1,336	18.1	712	484	62
General constituents (mg/liter)						
Suspended solids	195	75	7,060 ^a	140	143	* 95
Settleable solids (ml/liter)	0.8	0.9	ND	ND	2.2	0.4
BOD	204	144	ND	166	142	229
Oil and grease	39.9	19	400	26.0	36.7	14.5
NH ₃ -N	40.1	16.7	232	25.6	25.0	18.8
Organic-N	13.7	8.2	ND	ND	ND	2.3
Total-P	9.9	6.5	266	ND	ND	ND
MBAS	7.0	4.1	ND	ND	4.2	ND
Cyanide (CN)	0.17	0.09	0.18	0.05	0.004	0.013
Phenols	2.6	0.06	0.53	0.06	0.18	0.12
Turbidity (JTU)	113	53	ND	93	66	68
Toxicity (TU)	4.17	0.55	ND	1.20	ND	1.5

a. Total solids.

b. Thirty-two weekly composites and four 24-hr composites

c. Two 1-week composites.

Source: SCCRWP Annual Report 1979-1980

TABLE.III A.3-2 (Continued)

		Hyperion		Orange	Point	
	JWPCP	5-mile	7-mile	County	Loma	Oxnard
Trace metals						
(Mg/liter)						
Silver	0.019	0.044	0.70	0.011	0.023	0.020
Arsenic	0.010	0.013	0.22	0.003	0.009	0.005
Cadmium	0.027	0.02	0.08	0.047	0.009	0.014
Chromium	0.257	0.07	5.33	0.114	0.054	0.055
Copper	0.220	0.19	8.7	0.291	0.131	0.099
Mercury	0.0010	0.0025	0.062	0.0005	0.0016	0.0015
Nickel	0.21	0.16	3.4	0.14	0.07	0.043
Lead	0.145	0.15	4.89	0.11	0.092	0.093
Selenium	0.013	0.002	0.05	ND	ND	ND
Zinc	0.69	0.31	15.0	0.34	0.22	0.12
Chlorinated hydrocarbons						
(mg/liter)						
Discharger values						
Total DDT	1.4 ^b	0.18	0.89	Not detected	0.2	Not reported
Total PCB	0.69	0.61	9.32	1.64	0.2	1
Total identifiable	2.17	0.86	10.8	1.65	0.4	1
chlorinated hydrocarbons						
Project values ^c						
Total DDT	1.4 ^b	0.01	3.38	0.19	0.10	0.01
Total PCB	1.26	0.12	10.8	2.60	0.11	0.10

a. Total Solids.

b. Thirty-two weekly composites and four 24-hr composites.

c. Two 1-week composites.

Source: SCCRWP Annual Report 1979-1980.

a. Trace Metals: The Southern California Coastal Water Research Project (SCCRWP) has been monitoring pollutants for the past several years and some trends in concentration levels have been noted. Compared with the mass emissions of 1977, the figures for 1979 for the five major dischargers (Table III.A.3-1) show a decrease in total amount discharged of 7 percent for cadmium, 35 percent for chromium, 12 percent for copper, 20 percent for nickel, 14 percent for zinc, and 40 percent for cyanides. Three trace metals showed increases in the mass emissions during that time between 1977 and 1979. Lead increased 10 percent, arsenic 10 percent, and silver 25 percent (SCCRWP, Annual Report 1979-80 draft).

The California Mussel Watch Program monitors water quality along the mainland coast and at stations on the offshore islands. Fourteen of the thirty-two stations monitored by the program are in Southern California and the mussels, Mytilus californianus, collected from these stations reflected the general trend throughout the State with mussels located near major urban centers showing greater concentrations of trace metals in tissues than mussels collected away from the urban areas (California State Mussel Watch, Vol. II, 1979). Areas with significant accumulations of lead, silver, and zinc in mussels are San Diego-La Jolla Ecological Reserve Area of Special Biological Significance (ASBS), Newport Beach Marine Life Refuge ASBS, Santa Catalina Island West ASBS, Royal Palms State Beach, Anacapa Island ASBS, and Mugu Lagoon to Latigo Point ASBS. Cadmium, lead, and zinc levels in mussels exceeded the proposed Food and Drug Administration (FDA) interim Alert level at: Santa Catalina Island ASBS, West Santa Barbara Island ASBS, San Miguel Island ASBS for cadmium; San Diego-La Jolla Ecological Reserve, Newport Beach Marine Life Refuge, Santa Catalina Island ASBS West, and Royal Palms State Beach for lead; San Diego-La Jolla Ecological Reserve ASBS, Newport Beach Marine Life Refuge ASBS, Santa Catalina Island ASBS West, and Royal Palms State Beach for zinc. Elevated levels of mercury were found in mussels at the west end of San Miguel Island ASBS and Point Conception; however, the levels were below the proposed FDA limit of 1.0 mg/g wet weight of tissue.

The Bureau of Land Management funded baseline studies in the Southern California Bight which measured trace metal levels in sediments and water column (as particulates primarily). These studies indicated several areas where trace metals were in rather high concentrations. The metals Cu, Cr, Ni, Zn, Pb, Cd, Ba, and V were measured.

The concentration of any metal in a sediment (especially a surface sediment) is the end result of the flux of that metal through the marine system. Starting with weathering (dissolving of rocks) on land, metals are washed into the oceans via runoff, entering in one of three phases: dissolved as ions in the run-off water, associated with river suspended particulates, and embodied in the matrix of certain resistate rock minerals. In some instances this transport of heavy metals is added to be anthropogenic injection (i.e., sewage outfalls, industrial discharge, etc.), increasing the amounts of certain metals but not necessarily altering their geochemical pathways.

Upon contact with seawater, most of the heavy metals are partitioned even more to the particulate phase as a result of pH and ionic strength changes (increases in both). This has little or no effect on the mineralogically bound

metals. Once the metals have entered the marine water column, they then proceed to sink, if associated with particulates, at some rate proportional to particle size, or, if dissolved, they are eventually incorporated into sinking particulates by metabolic or adsorption phenomena after some finite time of water column residence. Since all these metals eventually come to reside in sediments, this last process is necessarily complete but sometimes relatively slow.

These are the processes going on to naturally distribute metals among the sediments in the Southern California OCS. To a first approximation, sediment from the shelf areas of both the mainland and the islands should have similar values for most metals. However, there are some obvious exceptions. Several areas coastal to the mainland are affected by sewage and industrial out-falls; this is particularly true in the Palos Verdes Peninsula area. On the mainland and island shelves, the shallow depths and high lateral energy of the water column act to move fine grained material into deeper, calmer water while often leaving behind heavy mineral-rich coarse grained particulates. These materials can be highly variable in their internal metal contents, but are usually lower in concentration than are deeper sediments (except perhaps in the case of barium) due to their relatively small surface area/volume ratios. Although the Tanner-Cortes Banks area is essentially a shelf regime, somewhat different (usually higher) metal levels result from increased productivity due to upwelling and the consequentially efficient incorporation of metals into organic debris.

The mean concentrations of metals in sediments analysed in the study are given in Table III.A.3-3 for the major topographic regimes of the Bight. The suspended particulate trace metals concentration and distributions are given in Tables III.A.3-4 and III.A.3-5.

The heavy metal concentration levels found in marine suspended particulates are dependent on several transport processes interacting with the geochemical characteristics of individual metals. Particulates themselves are basically of two sources: continental weathering and marine productivity. In addition to these two basic sources, it can be seen that sewage plays a significant role in contributing to trace metal suspended particulate loads for all metals, and Coal Oil Point seep areas contribute to barium and vanadium loads above other nearshore stations.

b. Hydrocarbons: The levels of various hydrocarbons in the waters of the Southern California Borderland remain a subject of concern and monitoring by local and State agencies. SCCRWP, in addition to the trace metals, monitors the mass emissions and concentrations of oil and grease and chlorinated hydrocarbons in local coastal waters. Oil and grease showed a 10 percent decrease in total amount discharged from 1977 to 1979 while the chlorinated hydrocarbons, DDT and PCB, continued a decline in mass emissions and sediments noted prior to 1977 with a decrease of 35 percent for DDT and 15 percent for PCB from 1977 to 1979.

In addition to trace metals, the California Mussel Watch Program measures the levels of selected hydrocarbons in mussel tissues. The program has shown that the level of oil pollution in California's bays and harbors is relatively

TABLE III.A.3-3

TRACE METAL CONCENTRATIONS (ug/g DRY WEIGHT \pm o) IN BENTHIC SEDIMENTS FROM SELECTED
REGIONAL CLUSTERS IN THE SOUTHERN CALIFORNIA OCS STATIONS

	<u>Ba</u>	<u>Cd</u>	<u>Cr</u>	<u>Cu</u>	<u>Ni</u>	<u>Pb</u>	<u>V</u>	<u>Zn</u>
Northern Islands (25)	447.7 \pm 122.2	0.55 \pm 0.31	51.3 \pm 15.1	11.1 \pm 4.3	15.9 \pm 7.7	10.5 \pm 5.3	36.8 \pm 15.1	31.6 \pm 11.9
Catalina Group (10)	396.5 \pm 308.9	0.34 \pm 0.10	181.1 \pm 73.0	24.0 \pm 9.2	48.4 \pm 19.3	9.0 \pm 3.6	72.6 \pm 27.4	71.2 \pm 22.8
Banks Region (16)	574.2 \pm 529.2	0.53 \pm 0.49	113.4 \pm 114.7	25.0 \pm 15.3	33.5 \pm 23.9	14.3 \pm 7.0	37.8 \pm 22.0	59.8 \pm 38.9
Coal Oil Point (7)	591 \pm 323	0.6 \pm 0.6	89 \pm 65	25 \pm 18	33 \pm 25	15 \pm 10	68 \pm 40	70 \pm 43
Santa Cruz HDSA (12)	612.4 \pm 276.7	1.1 \pm 0.8	90.2 \pm 26.8	36.1 \pm 12.7	45.7 \pm 15.0	10.0 \pm 4.0	81.9 \pm 36.9	95.5 \pm 35.5
Inner Basins (33)								
Includes:								
Pt. Dume (6)	691.8 \pm 55.3	1.1 \pm 0.3	107.5 \pm 17.0	37.2 \pm 9.4	43.5 \pm 13.1	23.3 \pm 10.9	84.7 \pm 18.3	98.2 \pm 23.1
Santa Monica (6)	723.7 \pm 71.6	1.0 \pm 0.5	142.3 \pm 29.3	51.8 \pm 12.8	38.3 \pm 5.4	21.7 \pm 5.2	113.3 \pm 9.4	118.5 \pm 11.7
South Coast (21)	691.8 \pm 112.8	0.42 \pm 0.20	88.4 \pm 28.0	31.8 \pm 6.0	41.2 \pm 14.0	24.5 \pm 11.7	107.0 \pm 19.7	106.3 \pm 18.7
Mainland Shelf (18)	826.1 \pm 104.7	0.59 \pm 0.24	57.6 \pm 25.3	14.9 \pm 8.4	20.6 \pm 9.3	17.3 \pm 7.7	65.1 \pm 24.9	56.9 \pm 22.2
All benthic stations (less 20 outfall stations)	591 \pm 323	0.6 \pm 0.6	89 \pm 65	25 \pm 18	33 \pm 25	15 \pm 10	68 \pm 40	70 \pm 43

From Southern California Baseline Study. Benthic, Year I, Vol. II.

TABLE III.A.3-4

TRACE METAL CONCENTRATIONS IN MAINLAND NEARSHORE SUSPENDED PARTICULATES

	Nearshore Average Seven Stations				Sewage Particulates Station 361,443		Conc. Factor Relative to Average Nearshore		Coal Oil Pt. Stations 193,204		Conc. Factor Relative to Average Nearshore	
	Surface		Deep		ppm	ng/L	ppm dry wt	ng/L	ppm	ng/L	ppm dry wt	
	ppm	ng/L	ppm	ng/L								
Cd	5.2	1.2	<4.6	<1.5	32	27	7	21	2.1	2.1	0.4	
Cr	---	---	170	62	990	780	(6)	(13)	<105	<90	(.6)	
Cu	<9.7	<3.8	34	12	570	415	26	52	22	23	1.0	
Ni	<16	<6.8	37	12	110	79	4	9	47	50	1.8	
Pb	8.3	3.2	15	5.3	240	200	20	48	14	14	1.2	
Zn	32	16	39	11	1025	940	29	70	24	27	0.7	
Ba	70	31	540	160	630	470	2	5	560	540	1.8	
V	<33	<13	<67	<22	<60	<42	~1	~2	110	120	>2.2	

TABLE III.A.3-5

TRACE METAL CONCENTRATIONS IN INNER BASIN, OUTER BASIN, AND OUTER BANK SUSPENDED PARTICULATES

	Inner Basins 350,372,386,402,412,420				Outer Basins 256,579,748,749				Outer Banks (Tanner & Cortes) 576,584,603,636,727,761			
	Surface		Deep		Surface		Deep		Surface		Deep	
	ppm	ng/L	ppm	ng/L	ppm	ng/L	ppm	ng/L	ppm	ng/L	ppm	ng/L
Cd	6.9	1.8	2.6	0.5	9.6	1.1	7.9	0.6	11	1.7	17	1.1
Cr	---	---	---	---	---	---	---	---	---	---	---	---
Cu	<8	<2.5	<18	<3.4	<34	<3.8	<55	<4.5	<13	<2.5	<53	<3.8
Ni	23	7	30	5.7	30	3.4	50	4.4	16	2.8	50	3.4
Pb	8.5	2.5	11	1.8	25	2.8	37	2.6	18	24	130	7.8
Zn	42	16	43	8.0	29	3.3	62	6.0	42	5.5	150	10
Ba	65	19	1100	160	<87	<10	1450	123	<48	<8.6	1010	67
V	<33	<10	<48	<9	<52	<6	<98	<8	<41	<6	<94	<7

high. Concentrations of petroleum accumulated by mussels in these areas are only slightly below those in mussels from the highly "polluted" area in the vicinity of a natural oil seep at Goleta Point near Santa Barbara. Along the shore of the Southern California Bight from Point Conception to La Jolla, levels of oil pollution in coastal waters, as indicated by their concentrations in mussels, are significantly elevated over those on the central coast and over those in the vicinity of the Southern California Islands. Almost all California Mussel Watch samples produced evidence that a low level of chronic oil pollution may exist along the entire coast.

Table III.A.3.b-1 indicates the levels of the unresolved complex hydrocarbon mixtures (UCMs) found in mussels sampled. Low levels of UCMs were found in mussels sampled from the Southern California Islands. The presence of UCMs does not in itself provide proof for petroleum pollution since many components of this unresolved mixture may be biological compounds or from industrial sources other than petroleum-related sources. The triterpenes have been used to characterize many of the crude oils and the pentacyclic triterpenes in particular have been found in many crude oils but not in biologically derived hydrocarbons mixtures. The pentacyclic triterpene C₂₈ hopane is especially interesting in that it appears to be present in California crude oils from the Monterey formation and absent in crude oils from elsewhere in the world with the exception of one crude from Russia. This C₂₈ hopane has been detected in a number of mussel samples analyzed thus far indicating some of the tissue burden is derived from local sources (Figure III.A.3.b-1). Changes in the levels of these petroleum hydrocarbons are difficult to measure and interpret due to a change in the methods for extracting hydrocarbons and the sensitivity of instrumentation which resulted in higher levels of hydrocarbons being reported for the second year of the Mussel Watch Program.

Elevated levels of hydrocarbons in mussels are similar to the pattern found for the trace metals in which the highest concentrations are generally found in or near harbors and urban centers. The one exception in Southern California is the area around Coal Oil Point and several other sites near Santa Barbara and Point Conception where naturally occurring oil seeps are found and where mussels show elevated hydrocarbon burdens. The polycyclic aromatic compounds are of particular concern in regards to water quality as reflected in mussel tissue burdens since many of the aromatics are known or potential carcinogens. Bays and estuaries appear to be the most important source of these compounds since mussels from open coastal waters did not show evidence of accumulation. Levels of benzo(a)pyrene (an unsubstituted pentacyclic aromatic hydrocarbon with carcinogenic properties derived from combustion processes) reported by Dunn and Young (1976) were generally less than 0.1 ng/g wet weight of mussels from San Diego to La Jolla and from several Channel Islands. Higher values were found in animals collected from Royal Palms (0.5 ng/g), Seal Beach pilings (8.2 ng/g), Seal Beach rocks (2.3 ng/g), Newport Pier (0.4 ng/g), and Oceanside (2.3 ng/g).

i. Water Column: The levels of hydrocarbons in Southern California Bight waters is discussed briefly in the FEIS for OCS Sale No. 48, Volume I, page 121 (USDI, 1979). Values of dissolved hydrocarbons ranged from 0.03 ppb to 20 ppb.

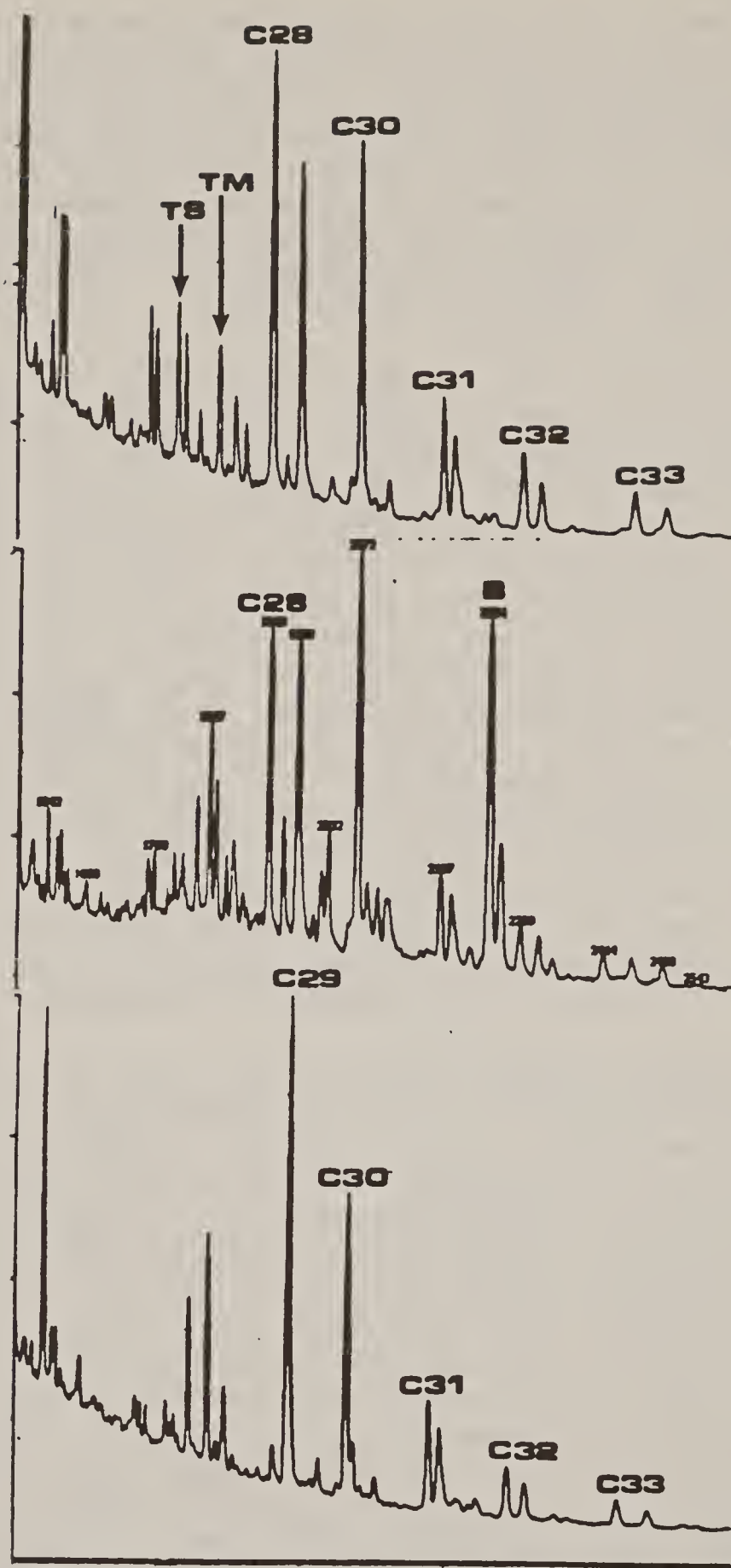


Figure III.A.3.b-1 Ion chromatogram, m/z 191, of extract of surf zone seawater from Goleta Point (top), an extract of mussels from Santa Cruz Island in the Southern California Bight (middle), and of an extract of oysters from the vicinity of Kuwait in the Arabian Gulf (bottom). The C-28 pentacyclic triterpane is clearly absent from the Kuwaiti sample

Source: California State Mussel Watch, Vol. III.
March 1980, Report No. 79-22.

TABLE III.A.3.b-1

DISTRIBUTION OF COMPLEX HYDROCARBON MIXTURES, PRINCIPALLY PETROLEUM, IN MUSSELS, MYTILUS SP., ON THE CALIFORNIA COAST IN 1978-79. CONCENTRATIONS IN MICROGRAMS/G DRY WEIGHT (PARTS PER MILLION); ARITHMETIC MEANS AND STANDARD DEVIATIONS

Area	No. of samples	Saturate fraction	Aromatic fraction	Total
Southern California Islands	14	10 ± 3	3 ± 0.8	12 ± 4
San Diego Harbor	1	170	49	220
Los Angeles Harbor	1	230	40	270
Goleta Point ¹	4	115 ± 91	290 ± 150	410 ± 230
Southern California Shore ²	12	53 ± 59	11 ± 10	64 ± 68
Morro Bay	1	18	10	28
Central California Coast ³	16	7 ± 3	3 ± 1	9 ± 4
Pacific Grove	2	14 ± 14	1.7 ± 1.9	15 ± 15
Elkhorn Slough	1	42	7	49
San Francisco Bay	1	130	53	180
Tomales Bay	1	5	5	10
Humboldt Bay	3	81 ± 5	15 ± 4	96 ± 6
Northern California Coast ⁴	16	7 ± 3	3 ± 2	9 ± 4

¹Bureau of Land Management Station, data from Risebrough, et al in press, 1979.

²La Jolla to Point Conception, excepting Goleta Point.

³Pt. Arguello to Farallon Islands, excepting Pacific Grove.

⁴Pt. Reyes to Redwoods-North.

Source: California State Mussels Watch Vol. III
March 1980 Report No. 79-22

ii. Sediments: The hydrocarbon levels in benthic sediments in the Southern California Bight are discussed briefly in the FEIS for OCS Sale No. 48, Volume I, page 121 (USDI, 1979). Recent surveys by SCCRWP (Wood and Mearns, 1979) are in agreement with the range of figures found by the BLM surveys for hydrocarbon in sediments [FEIS Sale No. 48 (USDI, 1979)]. SCCRWP noted a mean of 243 ± 44 mg/kg of hexane extractable material in the top 2 cm of sediments at the 60 m depth contour. As in the BLM study, values ranged up to several thousand mg/kg.

c. Thermal Effluent: Ocean water used to cool both conventional fossil fuel power plants and nuclear power plants is discharged into the marine environment in Southern California. The volumes are given for each power generating station in the Southern California coastal area in Table III.A.3.c-1. The amount of cooling water varies with power requirements, some stations not operating unless demand exceeds a certain limit. Scheduled and unscheduled maintenance also cause variations in the amounts of thermal effluents discharged and the figures given in the table represent maximum design or permit volumes at present. Not included in the table are the volumes associated with the two new nuclear units at San Onofre which are scheduled to go into operation in the near future. These two new units will add approximately 3.84×10^9 gallons of heated water to the ocean each day.

4. Meteorology: Minor variations in the basic Mediterranean-type climate occur along the Southern California Bight. The rainstorms that strike the Ventura and Santa Barbara County areas are typically more intense than those further south. Thus, rainfall ranges from about 10 inches per year at San Diego to 20 inches near Point Conception. Air temperatures are quite moderate along the immediate coast and offshore areas. Temperatures never dip below freezing and rarely exceed 100°F . Average air temperature range from the mid 50s in January to the upper 60s ($^{\circ}\text{F}$) in August at nearly all of the coastal stations.

Prevailing wind flow during much of the year is generally from the west at west-facing beaches, and from the southwest at south-facing beaches. Beyond the outer islands, prevailing wind flows are from the northwest. These northwest winds are prevalent year round. Average wind speeds generally increase with increasing distance from shore, ranging from about 6 knots along the shoreline to 15 knots or more at the exposed island stations.

An inversion is defined as a layer in which the air temperature increases with height. Inversions are significant because pollutants are trapped beneath these layers. Inversions are present along the California coast in summer nearly every day. Summer inversion heights are typically about 500 m (1,640 feet) in Southern California coastal sections. These inversion conditions, combined with prevailing onshore flow, create a potential air pollution problem for coastal areas located downwind of major emission sources.

Visibility is frequently obscured in the coastal areas due to fog, haze, and smoke. The incidence of low visibilities is maximized in summer and fall. Average visibility increases with distance from shore. During the summer, the percent occurrence of visibility less than 5 miles ranges from 24 percent at Long Beach to 10 percent at San Diego to about 7 percent over the outer coastal

waters. In the winter, the frequency of low visibility is 9 percent, 12 percent, and 4 percent at Long Beach, San Diego, and outer coastal water areas, respectively.

TABLE III.A.3.c-1

THERMAL EFFLUENTS DISCHARGE INTO SOUTHERN
CALIFORNIA COASTAL WATERS*

<u>Fossil Fuel Plants</u>	<u>Volume (gal/day) x 10⁶</u>
Los Angeles Department of Water and Power	1,271
Harbor	382.6
Haynes	1,014
Scattergood	495.8
Southern California Edison Co.	
Alamitos	
El Segundo	596
Huntington Beach	516
Long Beach	741
Mandalay	255
Redondo	1,137
Ormond Beach	687
San Diego Gas and Electric	
Encino	1,149.8
Silver Gate	215.4
South Bay	600.5
Station B	173.3
<u>Nuclear Fuel Plants</u>	<u>Volume (gal/day) x 10⁶</u>
San Onofre	447
Total All Plants	9,681.4

Source: Personal Communications from L.A. DWP, So. California Edison,
San Diego Gas and Electric.

*These figures represent design maximum flows. Actual flows may be less than 50% of some figures due to power generating requirement variability.

5. Air Quality: Air quality in a particular area depends upon the prevailing weather conditions, local topography, and the amount of pollutants being emitted into the air. Pollutant levels are measured by sampling or monitoring potential contaminants at selected locations. The State and Federal governments have established levels of contaminants which should not be exceeded in order to protect public health and welfare (see Appendix A). In California, the pollutants that frequently exceed these air quality standards are ozone (O_3), particulates (TSP), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and carbon monoxide (CO). Ozone, the most serious pollutant problem in California, is formed by the reaction of nitrogen oxides and hydrocarbons in the free atmosphere. The remaining pollutants are normally emitted directly into the atmosphere as a result of the combustion of fossil fuels.

Under the Clean Air Act Amendments of 1977, regions that exceed the air quality standards must develop an air pollution control plan so that the standards will be met by 1982 (1987 for some pollutants). The California Air Resources Board designates areas that exceeded the Federal air quality standard based upon monitored data. Table III.A.5-1 shows these designations for Southern California counties. It can be seen that the heavily populated San Diego and the South Coast Air Basin counties experience violations of many of the regulated pollutants. Of the coastal counties with sufficient monitoring data, only San Luis Obispo County meets the Federal oxidant standard. In general, NO_2 and CO violations occur only in densely urbanized areas. As might be expected, the higher pollution levels in urban locations can be directly attributed to the increased amount of pollutant emissions in these areas.

Oxidant levels are highest during the summer season because of the more intense inversion, prevailing onshore wind flows, and warm sunlight to speed the reaction of nitrogen oxides and hydrocarbons into ozone. Locations downwind (inland) of major urban emission sources are most severely affected by ozone. Thus, even though cities such as Riverside and Pomona have relatively low emissions, they experience severe oxidant problems because of pollutants emitted in the nearby coastal sections. The reason for this phenomenon is that the oxidant formation process takes several hours to occur, and by the time the reaction takes place, pollutants have been transported downwind. Other gaseous pollutants such as CO and SO_2 are generally restricted to the region surrounding major emission sources.

Air quality in the coastal zone is regulated by local air pollution control agencies, the California Air Resources Board (CARB) and the Federal Environmental Protection Agency (EPA). In general, local agencies are responsible for regulating stationary sources, while CARB regulates mobile sources as well as provides technical advice to the local jurisdictions. The EPA works closely with State and local agencies to ensure that Federal air pollution standards and regulations are met. In California, State and local regulations are usually more stringent than those promulgated by the EPA. Outer Continental Shelf (OCS) emissions are regulated by the Department of the Interior, USGS. OCS air quality regulations are discussed in Chapter I and POCS Technical Paper No. 81-7 (Environmental Resources Group, 1981).

TABLE III.A.5-1
EXISTING AIR QUALITY

Region	Pollutant				
	O ₃	TSP	NO ₂	SO ₂	CO
<u>South Central Coast Air Basin</u>					
San Luis Obispo County	B*	U	B	U	B
North Santa Barbara County	E	E	U	U	B
South Santa Barbara County	E	B	B	U	E
Ventura County	E	E	B	B	B
Channel Islands	U	U	U	U	U
<u>South Coast Air Basin</u>					
Los Angeles County	E	E	E	B	E
Orange County	E	E	E	B	E
San Bernardino County	E	E	E	B	E
Riverside County	E	E	E	B	E
<u>San Diego Air Basin</u>					
San Diego County	E	E	E	B	E

E - exceeds Federal air quality standards
 B - better than Federal standards
 U - unclassifiable - insufficient data

*Exceeds State of California O₃ standard.

Noise. Most of the region, immediately onshore from the proposed lease blocks, are moderately populated with some industry, particularly in Los Angeles and Orange Counties. At many shoreline locations, the predominant sounds are associated with wind noise, ocean surf, and infrequent vehicular traffic. Depending upon wind and sea conditions, ambient noise levels at these rural shorelines typically range between 40 and 60 decibels (dBA) and may approach 30 dBA during calm periods. Even though these sound levels are nearly the same as those experienced in suburban areas, many persons find "natural sounds" more esthetically pleasing than man-made sounds of the same level. Urban and industrialized shoreline areas, by comparison, may experience noise levels approaching 70 dBA.

B. Biological Environment

1. Plankton

a. Phytoplankton: Phytoplankton were discussed in detail in the Sale No. 48 Final Environmental Statement (USDI, 1979) and in the Pacific OCS Reference Paper No. II for Sale No. 48 (USDI, 1978). Approximately 280 species of phytoplankton are reported from California waters (Riznyk, 1977) their distribution and abundance being controlled by amount of light (related to water turbidity), levels of nutrients (nitrates), currents, intensity of zooplankton grazing, temperature, and upwelling events. There are both seasonal and long-term components to phytoplankton variability.

b. Zooplankton: Zooplankton were discussed in detail in the Sale No. 48 Final Environmental Statement and in the Pacific OCS Reference Paper No. II for Sale No. 48 (USDI, 1978). Recent analyses of CalCOFI zooplankton data (Bernal and McGowan 1980) suggest that the classical view of population and production dynamics of epipelagic ecosystems being forced primarily by upwelling phenomena is not able to explain long-term changes in the systems. Advection of water masses correlates well with zooplankton biomass and large scale water mass anomalies are better predictors of zooplankton biomass than upwelling. Furthermore, the productive area off California is at least 500 km wide. Chelton (1980) also concludes the above based on an analysis of long-term meteorological and physical oceanographic data. He found tide level records a simple and convenient method of monitoring the interannual variability of the large-scale changes in the California Current.

2. Benthos

a. Intertidal

Rocky Shore Intertidal Communities. According to the older literature (California Department of Fish and Game, 1973 and others) the mainland coast of Southern California consists of approximately 80 percent sandy beaches and 20 percent rocky beaches. Conversely, the offshore islands had 80 percent rocky shores and 20 percent sandy beaches, except for San Nicolas Island. This island had mostly sandy beaches in approximately the same percentage as that of the mainland coast.

Littler (1979) and Littler and Littler (1980) suggest that often beach type is not an adequate criteria for intertidal substrate type and, particularly when boulder substrates are separated from rocky substrates, the relative percentages of substrate type also change. Table III.B.2.a-1 shows that there is relatively more rocky intertidal (lower intertidal) on the mainland coast and less rocky intertidal (except for San Nicolas Island) on the islands than predicted by beach type.

More detailed information of the intertidal can be found in Murray (1974), Ricketts, Calvin and Hedgpeth (1968), Carefoot (1979), Straughan and Kanter (1977, 1978, 1979), Littler (1977, 1978, 1979 a, b), Littler and Littler (1980), Straughan (1977, 1978, 1979), and U.S. Department of the Interior (1975, 1978a, 1978b, 1979 and 1980).

Since there are so many summaries of the intertidal area of Southern California, this discussion will primarily update the Sale No. 48 EIS (U.S. Department of the Interior, 1979) and will be limited to the BLM Studies Program.

Although rocky intertidal areas are very rich in plant and animal life, the inhabitants must withstand environmental pressures not endured by subtidal organisms. Because of tides, the intertidal community is exposed to the air for various amounts of time. This exposure causes organisms to dry out and eventually die, unless certain morphological, physiological or behavioral adaptations are made. Behavioral adaptations include hiding under rocks, large algae and invertebrates, or by becoming part of a subassemblage association such as a mussel bed.

The rockweed Pelvetia sp. and Hesperophycus sp. are upper middle intertidal inhabitants which provide cover and protection for numerous snails, limpets, crabs, etc; during low tide. Their importance with respect to oil spills is discussed in the impact section. A mussel bed not only serves as a physical protection from predators and dessication, but collects sediments between its individuals and forms an additional substrate for organisms dependent upon sediment habitats. Kanter (1979) conceived a mussel bed as a three dimensional community and found 610 species at 20 locations (Figure III.B.2.a-1) within the Southern California Bight. Even this large number is a low documentation because organisms small enough to slip through a 0.5 mm mesh screen were not included in the estimate.

TABLE III.B.2.a-1

ABSOLUTE (KM) AND RELATIVE (%) AMOUNTS OF SUBSTRATE TYPES OBSERVED IN THE ROCKY INTERTIDAL ZONE OF THE CHANNEL ISLANDS AND MAINLAND COAST BETWEEN POINT ARGUELLO AND THE MEXICAN BORDER. Source: Littler (1979) and Littler and Littler (1980)

Location	Per Cent Substrate Type			Kilometers of Substrate Type		
	Rock	Boulder Beach	Sand	Rock	Boulder Beach	Sand
San Miguel Island	63.7	0.2	36.1	33.1	0.1	18.8
Santa Rosa Island	61.8	5.0	33.3	52.7	4.2	28.4
Santa Cruz Island	66.2	14.8	19.2	83.6	18.8	24.4
Anacapa Island	70.0	14.8	15.2	15.2	3.2	3.3
Santa Barbara Island	73.6	22.2	4.2	8.2	2.5	0.5
Santa Catalina Island	35.3	49.5	15.3	35.8	50.2	15.5
San Nicolas Island	60.7	4.6	34.7	25.5	1.9	14.5
San Clemente Island	68.6	17.3	14.0	62.5	15.8	12.8
Mean %	62.5	16.0	21.5			
Total km				316.6	96.7	118.2
Mainland between Point Arguello and Mexican Border	Upper Intertidal 16.5	8.4	75.1	80.9	Upper Intertidal 41.3	369.4
	Lower Intertidal 29.1	6.7	64.2	142.7	Lower Intertidal 32.6	314.3



Figure III.B.2.a-1 Rocky Intertidal Study Sites

Source: Littler (1978)

Littler and associates (Littler, 1979) reported 539 species at 22 Southern California Bight locations (Figure III.B.2.a-2) during the 3-year (1975 to 1978) BLM study. All these species were macroorganisms and consisted of 224 macrophyte (plants) and 315 macroinvertebrate species. Most species appeared to be restricted to certain geographic portions of the Bight. Only 42 species (25 macrophyte, and 17 macroinvertebrate) were found at all locations (Table III.B.2.a-2).

Computer programs (based on cluster analysis) were used to show which sampling sites were similar and assess the biogeographic relationships within the Bight. The result of both Kanter's mussel study (using species abundance) and Littler's rocky intertidal study (using percent cover and frequency) showed a general north to south trend with the mainland coast somewhat different in assemblage composition than the islands. Although the details differed, there appeared to be enough similarity to combine the results of these analyses into a grouping of locations which best reflects their results. This arrangement is shown in Table III.B.a-3. The largest differences in the groupings as it affects Table III.B.a-3 are: 1) Kanter put both sides of Santa Cruz Island in the coldest water group. However, Littler found the inner side (facing Santa Barbara Channel) was similar to cold water sites, but the outer side was more similar to intermediate to warm water sites; 2) There was a general inconsistency concerning the north to south arrangement of mainland sites; and 3) Santa Barbara Island, not considered in Kanter's analysis, is located with the warm water group. However, it was classed with the more intermediate water temperature groups in one parameter (frequency of occurrence). It probably is somewhat more transitional than Santa Catalina and San Clemente Islands. The two physical variables, besides currents and the resulting water temperature, which tended to obscure biogeographical relationships during these analyses, were sand inundation and the vertical extent of the intertidal area. The study site located at the northwest corner of San Nicolas Island had a peculiar but unpredictable grouping in all analyses and was omitted from Table III.B.2.a-3.

Characteristic of middle intertidal zones in Southern California are the closely compact algal turf communities which also show island-mainland differences. Extensive algal turf communities were prevalent in the middle-to-low intertidal zones at nearly all sites, the island turfs were larger and more robust with epiphytes consisting of medium-sized frondose algae; however, mainland turf communities near populated areas (as in the previous two years) were characterized by smaller and simpler forms with more compact structure, which were often heavily coated with a predominance of fine, filamentous epiphytes. The two mainland sites removed from human population centers (Government Point and Ocean Beach) had algal turf communities which more nearly approximated those of the island systems. From this Littler suggested that the highly epiphytized compact turf morphology, characterized by algal populations having relatively large surface-to-volume ratios, high reproductive capacities, high growth rates, simple thallus forms, and mechanisms for short and simple life histories, is characteristic of communities in stressed environments. Such populations may in fact be highly useful in identifying intermediate seral communities maintained in subclimax by lack of environmental constancy or some form of stress.



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Figure III.B.2.a-2 Mussel Bed Study Sites

Source: Kanter (1978)

TABLE III.B.2.a-2

TAXA COMMON TO ALL 22 STUDY SITES THROUGHOUT 1975-78
Source: Littler (1979)

Macrophytes:	Macroinvertebrates:
Blue-green algae	<u>Phragmatopoma californica</u>
<u>Bossiella orbigniana</u> ssp. <u>dichotoma</u>	<u>Balanus glandula</u>
<u>Ceramium eatonianum/sinicola</u> (2)	<u>Chthamalus fissus/dalli</u> (2)
<u>Corallina officinalis</u> var. <u>chilensis</u>	<u>Pachygrapsus crassipes</u>
<u>Corallina vancouveriensis</u>	<u>Tetraclita squamosa rubescens</u>
Crustose Corallinaceae (2)	<u>Anthopleura elegantissima</u>
<u>Gelidium coulteri/pusillum</u> (2)	<u>Acmaea (Collisella) limatula</u>
	<u>Acmaea (Collisella) pelta</u>
	<u>Acmaea (Collisella) scabra</u>
	<u>Littorina planaxis</u>
<u>Ulva californica/lobata</u> (2)	<u>Littorina scutulata</u>
<u>Egria menziesii</u>	<u>Cyanoplax hartwegii</u>
<u>Cryptopleura</u> spp. (4)	<u>Nuttallina fluxa/californica</u> (2)
<u>Gigartina canaliculata</u>	
<u>Polysiphonia</u> spp. (6)	
<u>Rhodoglossum affine</u>	<u>Pagurus</u> spp. (2)

TABLE III.B.2.a-3

SITE GROUPINGS BASED UPON SIMILARITY OF ROCKY INTERTIDAL AND
MUSSEL ASSEMBLAGES FROM COMBINED CLUSTER ANALYSIS FROM
LITTLER (FREQUENCY AND COVER) AND KANTER (SPECIES ABUNDANCE)

0 = outer or seaward side of an island
I = inner or shoreward side of an island

Source: Littler (1978) Kanter (1978)

Northern Group (islands)

*Point Conception (Government Point)
San Miguel Island I, 0
Santa Rosa Island I, 0
San Nicolas Island 0
Santa Cruz Island I

Northern Mainland Group

Santa Barbara Channel
eg: (Coal Oil Point)
(Goleta Point)
(Ventura)
Malibu

Intermediate Islands Group

Anacapa Island I, 0
Santa Cruz Island 0

Southern Islands Group

San Clemente Island I, 0
Santa Catalina Island I, 0
Santa Barbara Island

Southern Mainland Group

Oceanside - San Diego
Whites Point
Corona Del Mar
Dana Point
Carlsbad

*Actually, this is a mainland site.

Because Littler considers space and light as the limiting resource in the rocky intertidal, biotic cover was the primary ecological concern of the study. Major cover throughout the Bight at Littler's stations was contributed by plants, primarily by blue-green algae, coralline algae, the red algae Gigartina canaliculata and surf grass. Brown algae, particularly the feather boa kelp Egregia and southern kelp palm Eisenia, were also considered important because of their large size and high cover at their relatively restricted vertical location in the lower intertidal. In terms of overall cover, macroinvertebrates contributed less than the plants, although several animal species were important to the cover. Sandcastle worms Phragmatopoma, barnacles and mussels Mytilus contributed amounts equivalent to many of the more important macrophytes.

Seasonal variability was relatively small, especially when compared with many other areas of the United States. Kanter found seasonal variability so small, he discontinued seasonal sampling after the first year of the study. Littler found some decrease in most biological parameters following the winter months. This was primarily contributed by algae which tended to be reduced during low tides coinciding with warm Santa Ana winds. This suggests that local or even site-specific conditions tend to predominate more often and obscure the broad climatic effects.

The most important mussel bed features associated with community differences were quantitative and qualitative differences in the potential microhabitats. Those features associated with greater species numbers are primarily associated with sediment characteristics. Those features associated with lower species numbers included the quantity of tar, and rock and shell debris trapped within the mussel bed.

Sandy Beach Intertidal. The environment of the exposed sandy intertidal is considerably less stable than that of the rocky intertidal. Every wave on a sandy intertidal beach moves a great deal of sand.

Organisms on surf-swept sandy beaches achieve protection from wave shock by burying themselves in the sand (burrowing). That sandy beaches have limited populations, is not unexpected.

Because of the continued restructuring of sandy beaches, the number of individuals per species varies greatly from year to year. There is, however, a characteristic group of animals which lives just below the low tide line or within the sand between the tidal lines. A few even live higher up the beach in burrows or beneath organic debris. Some of these organisms are active only at night or on cloudy days; others remain hidden in the sand.

Straughan (1977, 1978, 1979) reported that physical factors defining the energy regime of sandy beaches are probably directly responsible for the variation in biotic diversity observed. It is likely also that these factors play an important role in determining the actual species composition. The sand crab, Emerita dominated the fauna of the steepest, most unstable beaches. The worm associations are best developed on the flattest, most regular beaches such as Scripps, Point Loma, and Coal Oil Point.

Figure III.B.2.a-3 depicts the profile of a typical, gently sloping, beach assemblage with the four zones of Allen (1976) superimposed. Data from the upper, middle, and lower box stations showed that the upper beach is normally dominated by the amphipod beach hoppers of the general Orchestoidea and Orchestia. These animals remain in the moist sand above high tide during day and emerge to feed at night. The sand crab Emerita analoga dominates the lower high tide and mid tide zones. Its habit of following the tides as it feeds on dinoflagellates, other minute organisms and small plant particles produces a broad tidal zonation. The major inhabitants of the mid and low tide zones are polychaetous (segmented) and nemertean (round) worms, especially on beaches with a gently sloping foreshore. The polychaete Euzonus mucronata typically occupies a narrow zone in the vicinity of mid tide where it occurs. Another sand crab, Blepharipoda, is infrequently found at the lowest tides along with the bean clam Donax gouldii. This description is a general one with many exceptions due to the great range of physiographic beach types in the Southern California Bight.

Overall, the differences between the biota of various sites were greater than seasonal differences between surveys. Another general observation is that island beach surveys were not separated from mainland beach surveys, suggesting similarity of biota.

Rather, what emerges is a pattern in which conditions at some sites favor development of relatively rich species groups regardless of their geographic position. Scripps Beach is well developed in all three infaunal categories while Point Dume is depauperate. Species of worms (polychaetes, nemerteans) appear to diminish most regularly down the column of sites. These species occur most commonly in the flat, gentle slopes of the middle and lower intertidal. The absence of worms at Point Mugu and Point Dume suggest that these sites lack a physically differentiated lower zone. Three depauperate sites, Point Mugu, Torrance and Point Dume, have faunas comprised entirely or primarily of the sand crab Emerita analoga which is characteristic of surf-swept exposed beaches. The island sites, San Miguel, Santa Cruz, San Nicolas and San Clemente, form an anomalous group in which crustaceans are relatively well represented.

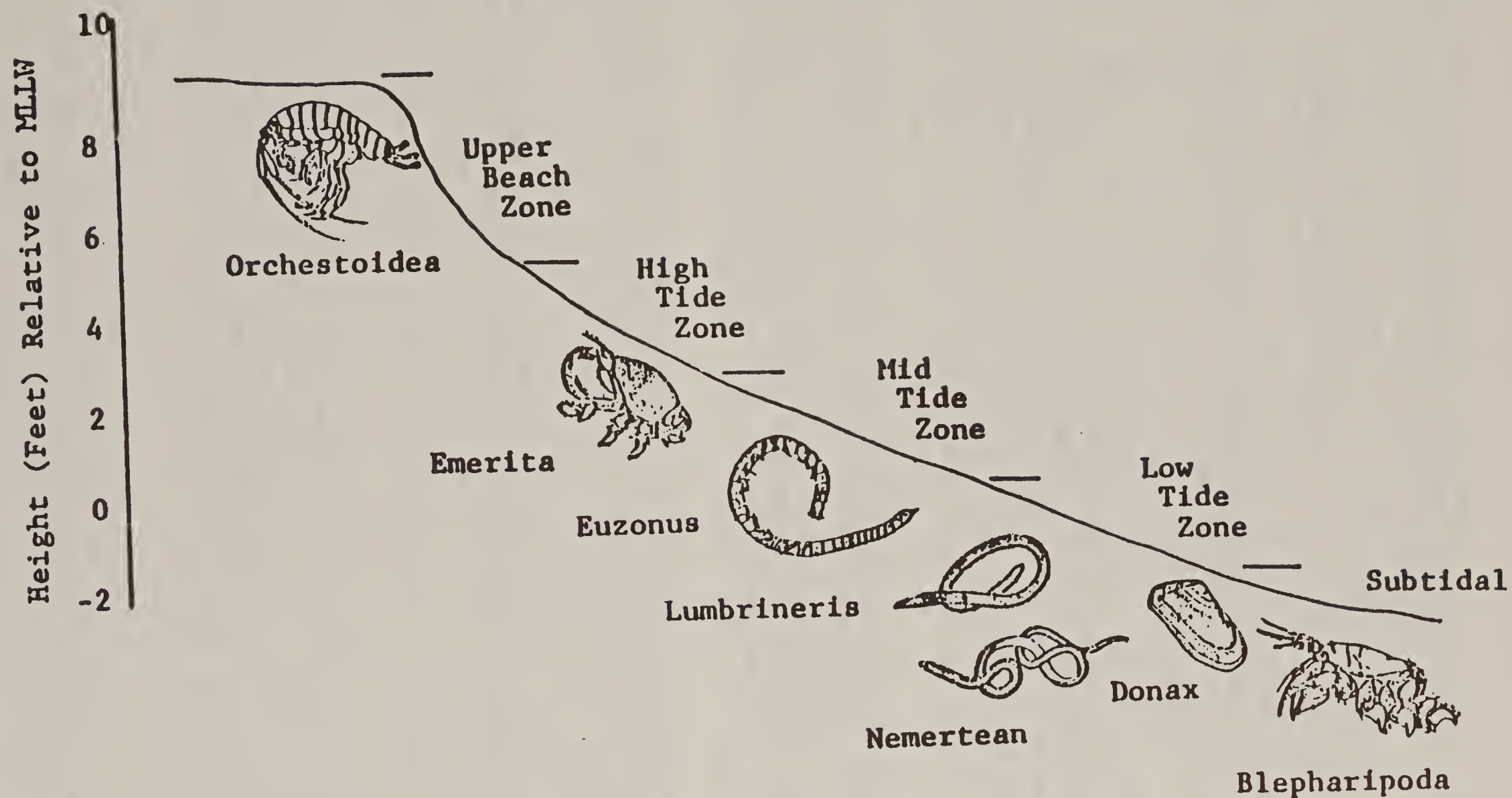


Figure III.B.2.a-3 Schematic Profile of a Typical Exposed Sandy Beach

Source: Allen (1976), Ricketts and Calvin (1968), and Smith and Carlton (eds.) (1975)

b. Subtidal: This section will provide an overview of the benthos. For a more detailed treatment see Sale No. 35 EIS and Sale No. 48 EIS, including Reference Papers No. II and III published by the U.S. Department of Interior (1975, 1978a, b, c, respectively). The BLM sponsored benthic studies, by Fauchald and Jones (1977, 1978), and the foraminiferan studies by Douglas (1977, 1978) also present valuable information.

Emery (1960) divided the Southern California offshore area into the mainland shelf (from the mainland coast to the 100 m or 300 foot contour) and the continental borderland (from the 100 m contour line to the Patton Escarpment, 50 to 150 miles offshore).

The benthos of the California Bight is extremely complex, consisting of many species and assemblages, and is difficult to summarize. There are many reasons for this complexity: 1) Numerous available habitats are created by the topography of the continental borderland, islands, deep basins, submarine canyons, and the resulting sediment complexity; 2) The relatively stable temperature and salinity conditions favor a biologically accommodated system consisting of many species (Sanders, 1968); and 3) The bight, especially the Santa Barbara Channel, is a biogeographic transition zone between the Californian and Oregonian Provinces with the division line at Point Conception (Valentine, 1966). Because the water temperatures and other factors are often typical of both provinces, the Bight has species of the northern Oregonian Province and the California Province, as well as species which are only found in Southern California Bight. Valentine (1966), for example, reported 180 species of Bivalvia and Gastropoda having a north-south geographic range of only 60 miles within the bight area.

Fauchald and Jones (1977) indicated the single most important environmental variable governing the distribution of species was depth. It appeared to be significantly more important than sediment and areal location, at least on the shelves and slopes.

Benthos - Shallow Water Soft Bottom. Shallow subtidal sandy bottoms are relatively harsh environments for benthic organisms because wave action causes unstable, shifting bottoms which have few hiding places, or attachment substrates for sessile organisms. These conditions prevent an extremely diverse assemblage in comparison with a kelp bed or a shallow rocky area.

Species of this habitat typically include types that have adapted to the shifting sands such as species that occupy transient or relatively permanent deep burrows, (e.g., the long-neck clams), or that can burrow quickly, (e.g., the sand crabs Blepharipoda), or that construct flexible tubes, as Loimia medusa, or that are spindle-shaped (e.g., the lancelet Branchiostoma, the polychaetes Ophelia and Nephtys, and peanut worms Sipunculus) (Allan Hancock Foundation, 1965).

As part of the "State Survey" during the late 1950s, the Allen Hancock Foundation (1965) reported that, although in depths of 3 to 9 m (10 to 30 feet) there were far fewer species than deeper areas, the number of individuals were not greatly reduced in comparison with deeper bottoms on the mainland shelf.

This was particularly true with polychaetous worms, but crustaceans, molluscs, and the spiny skinned echinoderms were reduced in number of specimens.

One of the more important species at certain areas was the sand dollar Dendraster excentricus which appears to be fairly widespread on the shallow waters of the California Bight mainland. One of the more comprehensive studies conducted in the Bight is the study by Morin (1981, in press) at Zuma Beach. Morin divided the area into three zones based upon the principal species present. Zone 1, beginning at about 3 m (10 feet) and extending to a depth of 6 m (20 feet) was characterized by the pismo clam (Tivella stultorum), the sea pansy Renilla kollikeri and its predator the pansy nudibranch Armina californica. Near the shoreward edge of this zone, were relatively large populations of the purple olive snail (Olivella biplicata). Zone 2 occurring roughly between 6 m and 9.1 m (20 feet and 30 feet) was the sand dollar dominated zone where densities of over 400 individuals/m² were reached. Sand dollars so completely dominated this zone that, except for starfish and crab predators, a parasitic snail and several species of barnacles and hydroids primarily attached to the sand dollars tests, they were the only major species occupying the bottom.

Merrill and Hobson (1970) reported densities as high as 1,044 individuals/m² at Zuma Beach. They also reported the bed to be extensive, extending horizontally along the coast for 5.8 km (3 miles) and from 15.2 m (50 feet) to 91.4 m (300 feet) wide. The third zone occurs at slightly quieter, deeper depths where sand is disturbed less by surge. Here species having a more equal numerical dominance were found.

Mainland Coast. Under similar conditions of depth, sediment type, distance from the mainland coast, etc., certain species tend to be found in relatively high number of individuals. The entire mainland shelf of the Bight exhibits similar dominant species with regional differences manifested by an abundance of one or two species normally occurring in moderate numbers. The most numerous and frequently occurring species on the mainland shelf are shown in Table III.B.2.b-1. The polychaete Lumbrineris sp. was most frequently collected, but the brittle star Amphiodia urtica was more numerically abundant than any other species. The 60 percent frequency of occurrence of the brittle star in the BLM study was somewhat less than the 85 percent frequency in the State study (Allan Hancock Foundation, 1965), although a wide distribution of this species occurred during both studies. The principal species of the mainland shelf are similar to that of the island shelves shown in Table III.B.2.b-2. Perhaps the main difference is the lesser importance of the brittle star Amphiodia urtica on the island shelves, although it was numerous at some stations. Comparison of the most commonly occurring species reported in the State study and the BLM study indicates fairly good agreement in the two studies separated by a period of about 15 years on the mainland shelf. The only very common species of the BLM study not also abundant in the State study was the biavalve Parvilucina tenuisculpta.

An exception to the consistency generalization may be the echiuroid worm Listriolobus. Near Santa Barbara, Allan Hancock Foundation (1965) reported the vast majority of specimens both in numbers and biomass (80 percent) consisted of the echiuroid worm Listriolobus pelodes. This species remained

TABLE III.B.2.b-1

MOST FREQUENTLY OCCURRING SPECIES ON MAINLAND SHELF

	Mean No./ Area	Frequency	
		Ratio	Percentage
<u>Lumbrineris</u> sp. polychaete	3.8	79/98	80.6
<u>Parvilucina tenuisculpta</u> bivalve	7.0	69/98	70.4
<u>Axinopsida serricata</u> snail	5.6	67/98	68.4
<u>Amphiodia urtica</u> brittle star	10.0	59/98	60.2
<u>Pectinaria californiensis</u> polychaete	2.1	51/98	53.1
<u>Heterophoxus oculatus</u> amphipod	2.4	52/98	52.0
<u>Euphilomedes carcharodonta</u> Ostracod	5.7	49/98	42.9
<u>Tellina carpenteri</u> bivalve	1.3	42/98	42.9

Source: Fauchald and Jones (1977) and SAI (1976).

TABLE III.B.2.b-2

MOST FREQUENTLY OCCURRING SPECIES ON ISLAND SHELVES

	Frequency	
	Ratio	Percentage
<u>Lumbrineris</u> sp. polychaete	61/92	66.3
<u>Aoroides columbiae</u> amphipod	59/92	64.1
<u>Parvilucina tenuisculpta</u> bivalve	54/92	58.7
<u>Euphilomedes carcharodonta</u> ostracod	49/92	52.5
<u>Tellina carpenteri</u> bivalve	42/92	45.6

Source: Fauchald and Jones (1977) and SAI (1976).

dominant in 1969, (Fauchald, 1971) but was greatly reduced as compared to the early 1960s at the time of the Allan Hancock Foundation Study.

The Los Angeles County Sanitation District (1976) reported a huge increase in the population off Palos Verdes near the Whites Point sewage outfall. The worms first became abundant at an intermediate distance of several miles from the outfall, then after a couple of years populations increased near the outfall. The reason for the buildup of large populations in an area is not fully understood. Allan Hancock Foundation (1965) attributed the large populations to extremely fine sediment, but the recent findings by the L.A. Sanitation District indicated that fine sediment and high organic matter may be instrumental in some population buildups, provided the level of toxicants of the sediments are below a certain level.

There has been speculation that the population of Listriolobus may be maintained at relatively high numbers near Santa Barbara by a constant current gyre which allows a consistent settlement of organically rich sediment on the bottom. Recent surveys have failed to substantiate this, however.

Island Shelves. Most of the island shelves sampled during the BLM study had a rather large number of species having over a 50 percent frequency and many even over a 75 percent frequency which indicates these species do characterize the areas or at least are widely distributed within them. An abbreviated list of the principal species from all these areas is shown in Table III.B.2.b-2. Many of the species on this list are also extremely important on the mainland shelf particularly the polychaete Lumbrineris sp. and the bivalve Parvilucina tenuisculpta (Table III.B.2.b-1). The only important species, in terms of frequency, on the island shelves which is not important on the mainland shelves, is the amphipod Aoroides columbiae.

One noticeable difference between the northern island shelves and the mainland shelves is the greater relative number of microcrustaceans on island shelves. This was particularly evident at the 8 stations to the north of the Channel Islands where the relative dominance of crustaceans was over 67 percent compared to approximately 20 to 30 percent on the mainland shelves. Data on the number of species and specimens indicate there may be no significant difference between the island and mainland shelves.

Submarine Canyons. The canyons extending from the coastline to the deep basins contain unique and varied fauna (Hartman, 1963). Canyon habitats are subject to considerable fluctuations in environmental conditions because they serve as natural channels for shoreward movements of upwelling waters and organisms and for downward transport of runoff, sand, and debris. These processes result in widely varying conditions, to which the indigenous organisms must adjust.

Hartman (1963) surveyed the 13 large canyons off Southern California. The principal species of the canyons differed from those of the mainland shelf only meters away, and species composition reflected bottom sediment size and depth. No communities based on dominant species were defined. Some of Hartman's conclusions on the faunas of the canyons include:

Each canyon is found to support a richly diversified fauna, high in specific entities, with as many as 262 species in a longshore (Newport) canyon.

The largest numbers of species in a canyon occur in shallowest, or shelf, depths, and they are members of the shelf or slope fauna. There is a gradual decline in numbers of species (though not necessarily specimens) with depth, but there are deviations from this principle, perhaps partly due to factors other than depth.

The replacement of species from one canyon to the next is such that from 30 percent to 60 percent are different. These differences may be partly correlated with latitude, with change in sediments, with distance from shore, or with other, still unknown factors, concerned with the biology of specific entities.

Slopes. Fauchald and Jones (1977) reported the most frequently encountered benthic species on mainland slopes was the ice cream cone worm (Pectinaria californiensis). Other species having wide distributions, based on frequency of occurrence, are the shellless aplacophoran Limifossor fratula, the polychaete Prionospio cirrifera, and based upon abundance, the bamboo worm (Maldane sarsi).

The mean wet weight standing crop differences between the mainland shelf and slope were not evident, although an "atypical" sample or samples could have weighted the deeper areas somewhat high (Fauchald and Jones, 1977). As with the mainland, the number of species on the Santa Cruz Basin slope decreased (by a factor of 3) as did the number of specimens (by a factor of 4) from the shallow water fauna.

Tanner-Cortes Banks and Ridge. Fauchald and Jones (1977) divided the soft bottom of Tanner-Cortes Banks into a bank top assemblage and a bank-trough assemblage. Amphiodia urtica and Parvilucina tenuisculpta are also relatively important here. Recent analysis by Jones (personal communication) indicates that these assemblages are significantly different from the other assemblages of the Bight. The highly productive and unusual hard bottoms of the Banks are of even greater interest, however, and are discussed below with hard bottoms.

Both the Santa Rosa Ridge and the Banks have proven to have a very rich soft bottom fauna with a well developed carnivore component of the food chain which was reduced on the mainland shelf and other areas of similar depths (Fauchald and Jones, 1979). Food chain interrelationships of the benthic community are not well understood, but the large carnivore link probably reflects either high organic enrichment of the bottoms of the ridge-bank or "normalcy" with the mainland shelf community altered in some way causing a reduction of carnivores within the bottom sediments.

The most important discovery of the BLM study from a scientific standpoint was the monoplacophoran Vema hyalina (McLean, 1979), a representative of a group of molluscs thought extinct until 1952 and possibly a very primitive form of the very important mollusca phylum. The truly amazing aspect of this discovery, however, lies in the fact that this is the only monoplacophoran ever taken at depths shallow enough to allow the specimens to be transported alive

to the laboratory for examination and study (Lowenstam, 1978). Although Lowenstam (personal communication) has sampled several other areas for other specimens, so far it has only been collected at one general area on Santa Rosa-Cortes Ridge on cobbles at depths of 174 to 402 m (571 to 1,319 feet). Although it was reported at 174 m (571 feet) from cobbles collected by fishermen, this has not been confirmed.

Other species or associations on the ridge, banks, or slope which may be rare and important to protect include (John Mohr, personal communication):

Dimya sp., a bivalve taken only on Tanner Bank and taken only once,

Crania californica, a rare lampshell (Brachiopoda) of the Banks,

"a living Pleistocene submarine marl assemblage of foraminiferans,"

Pogonophorans, the largest non-parasitic gutless animals,

Vestimentiferans, a large gutless worm typical of deep ridges, and

"Purple coral" Allopora californica, a coral found in abundance on the banks, and at only a few other locations in the Bight.

Basins. The deep basins have a uniformly low standing crop biomass (ranging from 1.5 grams per square meter to about 50 g/m² and averaging from 3 to 12 g/m²), relatively few species and low population densities (11 to 120 specimens per square meter) especially when compared with the mainland shelf. Hartman and Barnard (1960) reported 317 species in the basins compared with over 1700 on the mainland shelf. Emery (1960) indicated the three shallowest basins, Santa Barbara, Santa Monica, and San Pedro, have a far more impoverished fauna than the outer basins because of greatly reduced oxygen content in the water and sediments. The low oxygen content is due to: 1) correspondence of the sill depth at 500 to 700 m (1,650 to 2,310 feet) with the oceanic oxygen minimum layer, and 2) little decomposition of organic matter before reaching the basin floors.

Hartman and Barnard (1960), however, determined that the shallow basins have approximately the same standing crop as the outer basins, two or three times deeper. It would be expected that food supplies to the deeper and seaward basins would be smaller than to shallow basins, suggesting that food might be a limiting factor to the standing crop in the deeper basins, while dissolved oxygen is limiting in the shallower basins. Theoretically, shallow basins are provided with larger organic food supplies, which are reworked at a slower rate (discounting bacteria) and, thus, accumulate and are lost by burial, especially since sedimentation should be faster in the shallow nearshore basins.

Comparisons between the data of Fauchald and Jones (1977) and those of Hartman and Barnard (1960) point out several differences. Several of the dominant species were the same in the two studies, especially in San Pedro Basin. However, there were many differences, which indicated a general lack of species having large enough populations to be sampled frequently enough to be considered major dominant species.

Benthic Foraminifera. As part of the BLM study of the Southern California Bight, Douglas et al. (1977) sampled microbenthic foraminifera. Both number of species and standing crop (number of live specimens/cm²) were higher in warm water temperature months (summer) than during cold water months (winter). This was particularly so at mid-water areas where as much as a 10-fold warm water increase was recorded. The greatest number of species were collected in a few isolated basins while the lowest number of species were found at the outer banks and ridge areas as well as areas having low dissolved oxygen. The highest standing crop values were recorded in the deepest parts of the inner basins while the inner mainland shelf outer basins generally had low values.

Depth was an extremely important variable, particularly for the standing crop whose contours roughly paralleled bathymetric contours of the area.

Five communities of foraminifera can be defined as presently living in the sampled area of the Southern California Bight. The communities have been defined as geographically limited, recurrent associations of species. While membership in a particular community need not be exclusive, most species achieve their maximum abundance and occurrence in only one association. Four of the communities are predominately found in the shallow water (less than 15 m (49 feet)) of the mainland and insular shelf, and the offshore banks and ridges. They are the Nonionella-Eggerella Community, the dominant association of the mainland shelf; the Cassidulina-Hanzawaia Community, the dominant association of the insular shelf and shallow banks; the Buccella-Cibicides Community, present on offshore banks and ridges; and the Bolivina-Trochammina Community, a cosmopolitan association of species found throughout the Borderland.

A single community, the Epistominella-Suggrunda Community, is found in deep water environments below the shelf edge. Its definition is based almost entirely upon samples from the two nearshore basins, the Santa Monica and San Pedro Basins. Evidence from other sources indicates that other foraminiferal associations are present in the middle and outer basins of the Borderland. A principal feature of the Epistominella-Suggrunda Community is its occurrence in low oxygen environments, where the oxygen content falls to below 0.3ml/l. (Minimum values in San Pedro Basin are near 0.09 ml/l.) Maximum abundances of the dominant species of the community are recorded in the deeper portions of the nearshore basins.

Basically, the shallow water communities of both the inner and outer Borderland are found in water of northern origins with high temperature, low salinity, and high oxygen content, and on substrates with a medium to coarse grain size, varying carbonate content, and a low organic carbon content. Foraminiferal communities of the slope and basin are found in water of southern origin, with low temperature, high salinity, and low oxygen content; and on substrate with a fine grain size, low carbonate content, and high organic carbon content.

Subtidal Hard Bottoms. Few systematic studies of any specific reef area have been conducted in the Southern California Bight. Perhaps the relationships reported by Peguegnat (1963, 1964, and 1968) of a reef 9.5 to 18 m (31.3 to 59.4 feet) deep, located off Corona del Mar is illustrative of shallow near-shore reefs in general. According to Peguegnat:

The degree of water movement on the reef, which results primarily from the propagation of surface waves, varies inversely with depth. It was suggested that this pattern of water movement determines the distribution of the major units of the epifauna through its effects upon the availability of food of different types at particular points on the reef. Suspended organic matter is not only more abundant on the upper levels of the reef, but its rate of delivery to crust-forming organisms is enhanced by turbulence. Disposition of organic materials removed from the upper part of the reef is facilitated by the sharp reduction in degree of water movement along the lower sides and bottom of the reef.

The depth differential of the reef was great enough to involve vertical temperature difference of as much as 6°C. The part of the reef above the thermocline exhibits faunal affinities to southern epifaunas, (e.g. in regard to densities of the rock oyster Chama pelluoida and associated species), whereas other species with northern affinities, such as Henricia leviuscula, occur only at the reef base and are absent from the shallower reef located nearby.

In general, the predominant species in the upper two zones are sessile suspension feeders, which form thick incrustations that form biotopes for large numbers of small sessile and motile species. In the lower zones, on the other hand, the predominant species tend to be motile scavengers and deposit feeders and the incrustations that are present are thin and formed by single species. These zones, together with their general depth limits along the transect where the sampling was done, are: Reef-top Zone, 9.5-12.5 m, where the important epifaunal features is an incrustation formed by the rock oyster Chama pellucida; the Mid-reef Zone, 12.5-14.5 m, which supports a thick growth of calcareous ectoprocts; the Reef-base Zone, 14.5-16.5 m, where large sea urchins and deposit feeding sea cucumbers predominate; and the Mixed-bottom Zone, 16.5 m, which is located on the adjacent sea bottom of sediments and rock slabs and which supports a mixture of infaunal and epifaunal species. There was a general top-to-bottom decline in biomass, number of species and individuals.

Tanner Bank and Cortes Bank are located approximately 179 km (111 miles) and 186 km (116 miles) west and west-southwest of San Diego. These banks are the shallowest portions of the Santa-Rosa Cortes Ridge which stretches from San Miguel Island on the north, and past San Clemente Island on the south. The areal extent of Tanner Bank and Cortes Bank, at 60 m (197 feet), is approximately 769 ha (1,900 acres) and 2,914 ha (7,200 acres), respectively. Both banks have high relief rocky bottoms. Tanner Bank's shallowest point is 25 m (82 feet), Cortes Bank's is 1 m (3 feet). These banks, therefore, act as the outermost islands of distribution for California shallow water benthic organisms.

Tanner and Cortes Banks are within the California Current. The main contribution of the California Current to the Banks is as a transport mechanism for the cool, low-salinity subarctic water, modified by influx from rivers and a gradual warming as it moves south.

Strong bottom surge and trench-ridge type topography of the Banks are thought to interact to enhance upwelling. Despite the assumed nutrient-rich water,

water visibility usually ranged from 11 to 31 m (35 to more than 100 feet) during calm to moderate seas (Interstate Electronics, 1979).

Biological information on the Tanner-Cortez Banks was expanded by the BLM-sponsored Interstate Electronics Survey. Following are some of the general conclusions from that study.

- 1) Many of the species observed during the referenced survey are similar to those observed along the Southern California coastline and the Channel Islands, although relative abundances of many species differed considerably.
- 2) Of major biological significance is that the depth ranges and deepest depths of occurrence of some communities and species are greater on the Banks than has been previously noted for the Southern California Bight. The extreme water clarity results in the expansion of algal community depths from less than 50 m (165 feet) to over 100 m (330 feet). Corals showed range extensions into shallower waters as compared to both northern and southern populations probably as a result of the Banks' locations between open ocean current and the Southern California Gyre.
- 3) In general, most of the fish observed at Tanner and Cortes were within documented depth ranges, with only a few species deeper than previously recorded; however, the algae and invertebrates showed increased depth ranges and deeper depths of occurrence. This differential is probably due to the much more extensive data base for depth distribution of fish, due to commercial and sportfisheries for many species.
- 4) Also of major significance is the occurrence of species previously known only from more northern or southern waters. Such occurrences show that Tanner and Cortes Banks are an important area of overlap of northern and southern species distributions. The extension of depth ranges of many species and the high diversity of corals and other organisms in the study area demonstrates that the Banks act as an important refuge for many Southern California Bight organisms currently disappearing from more heavily impacted nearshore areas.

Additional generalizations of the area were obtained during a series of Pacific OCS Office conducted biological surveys (Smith, 1976). The Banks serve as important feeding grounds for large numbers of California sea lions, Zalophus californianus and many species of sea birds. Other points which are peculiar to the individual banks are: Cortes Bank is the home of large numbers of spiny lobsters (Panulirus interruptus) and abalone (Haliotis spp.); Tanner Bank has the highest recorded densities of chestnut cowries (Cyprae spadicea) and sheephead fish (Pimelometopon pulchrum). These banks are the last remaining area in California with large numbers of giant seabass (Stereolepis gigas). Between the soft bottom box core survey (Fauchald and Jones, 1977, 1978) and the hard bottom transect survey (Wolfson, 1978) also sponsored by BLM, many new species were discovered.

Because of the biological importance and uniqueness of the area, the Interstate Electronics Study is summarized as follows.

Forty-one dives were made in the submersible, with a scientific observer, in six study areas.

Five major communities including eleven subcommunity species associations were distinguished from the submersible survey data for Tanner and Cortes Banks (Table III.B.2.b-3).

Three of these, the sea palm/erect coralline algae (Eisenia/Calliarthron), the large-bladed brown algae (Agarum/Laminaria), and the encrusting coralline algae communities are characterized by the dominant macroalgae seen on rocky substrates. The fourth is a deep-water sea lily/brittle star (Florometra/ophiuroid) community on rocky substrate; the fifth is a sand community with sea urchins and starfish (Lytechinus/asteroids). The rocky substrate biota were fairly uniform in composition in all areas and showed a clear and relatively consistent depth distribution.

No differences were noted between the biota occurring on different types of rock substrate although some differences in exposure to local currents produced differences in the organisms found on low relief rocks as compared to high rocks or cliffs. The proximity to sand did produce significant differences in the biota.

The brown algae and sea palm/erect coralline algae communities supported a higher diversity and biomass of organisms than the deeper encrusting coralline community. Coelenterates (36 species), echinoderms (38 species) sponges (14 species) and molluscs (40 species) were the best represented invertebrate phyla on the banks.

Crustaceans (lobsters, crabs, and shrimp) were rarely observed due to their cryptic or nocturnal habits and small size. Shrimp were much more visible in the evening than during daylight hours. Essentially all crustacea observed were seen in medium to high relief areas where ledges, cracks, and crevices were numerous and extensive. A few crabs were seen on open sand. It is likely that crustacean biomass is considerably larger in the Banks area than was observed because they are preferred food items for many fish (Quast, 1968) and the fish population was considered to be large.

Forty species of molluscs were observed in the study area, however only six species could be considered common (Calliostoma annulatum, Tegula regina, Astraea gibberosa, Acmaea funiculata, Nassarius insculptus, and Cidarina cidaris). Several unusual snails were seen including Fusitriton oregonensis (which has only one previous record this far south of San Nicolas Is.), Calliostoma turbinum, a rare or new species of the Muriceidae or Cancellaridae, and a peculiar unidentified banded snail.

The most widespread species, which were seen essentially throughout the depth range and in all rocky areas of the survey included the purple column anemone (Stomphia venosa), the anemone (Tealia piscivera), an ostrich-plume hydroid,

TABLE III.B.2.b-3

COMMUNITIES OBSERVED AT TANNER AND CORTES BANKS

Source: Interstate Electronics (1979)

Community Dominants	Subcommunity Dominants	Depth Range
Sea palm/erect coralline alga (<u>Eisenia</u> / <u>Calliarthron</u>)	red algae (<u>Gelidium</u>) large-bladed brown algae (<u>Laminaria</u> / <u>Agarum</u>) brittle starfish (<u>Ophiothrix</u>) brown algae (<u>Zonaria</u>)	14 to 26 m 14 to 40 m 14 to 40 m 26 to 40 m
Large-bladed brown algae (<u>Agarum</u> / <u>Laminaria</u>)	erect coralline algae (<u>Calliarthron</u>) sea fan/starfish (<u>Eugorgia</u> / <u>Mediaster</u>) brown algae (<u>Zonaria</u>)	40 to 60 m 40 to 60 m 40 to 60 m
Encrusting <u>coralline</u> algae	starfish (<u>Mediaster</u>) seafan/starfish/sponge (<u>Plumarella</u> / <u>Mediaster</u> /sponge)	60 to 68 m 68 to 89 m
Sea lily/brittle star (<u>Florometra</u> / <u>Ophiuroid</u>)		89 to 149 m
Sand Community	sea urchin/starfish (<u>Lytechinus</u> /asteroids)	Various

the white urchin (Lytechinus anamesus), a starfish (Mediaster aequalis), and encrusting and massive sponges (Demospongiae).

Sand patches and channels occurred throughout the study area and were characterized by the white urchin (Lytechinus anamesus) and several asteroids (including Mediaster aequalis, Luidia foliolata, and Astropecten verrilli). Although several species, notably fish and gastropods, were fairly common in several communities, most species distributions conformed fairly well to community boundaries.

Allopora californica was patchy throughout its distribution 18 to 123 m (59 to 403 feet) and occurred on all areas except on Santa Rosa Ridge which was apparently too deep. Colonies were found to be associated with exposed northwest slopes on boulder and ridge tops below 30 m (98 feet) and mostly on sides of rocks in shallower areas, apparently maximizing exposure to the currents while minimizing storm damage. However, in the shallowest, presumably maximum-energy regimes, Allopora was not found and this may be attributable to storm breakage of the brittle branches. This hydrocoral was also absent from areas which were subject to sand scour or silt deposition. It may be concluded that Allopora californica requires moderately high energy currents or surge essentially free from silt or sand. Most of these colonies were pink or red in color with only small stands of the more typical purple variety being found at 45 m (148 feet) depth north of Bishop rock and at 96 m (315 feet) on Northwest Cortes Bank. Only on Northwest Cortes was Allopora commonly seen below 70 m (230 feet) depth.

Kelp. The giant kelp, or Macrocystis, identified by having many floats (pneumatocysts), extends from Sitka, Alaska to Point Abrevjas, Baja California, but does not form extensive forests north of Ano Nuevo. For more detailed information, see POCS Reference Paper No. II. (USDI, 1978c).

Unless otherwise indicated, the information for Macrocystis was taken from North (1971) who conducted his studies in Southern California.

The distribution of the giant kelp in Southern California is shown in Visual No. 2 of Sale No. 48 EIS (USDI, 1978a). These data are from the BLM sponsored study reported by Hodder (1977) conducted in 1975.

In general, the plant kingdom has a slightly different life cycle than does the animal kingdom, involving an alteration of two different life stages called the gametophyte and sporophyte stages. Particularly in larger species, these stages consist of different morphological forms, the sporophyte being the larger and longer lived in kelp. The life history of Macrocystis has been developed in the laboratory with confirmation of some of its phases in the field, although the gametophyte generation has apparently never been found in the field.

The life history of Macrocystis consists of a large, long-lived (from 1 to 6 years) sporophyte plant and a microscopic short-lived (several months) gametophyte plant. Except for some asexual reproduction of one species in a limited geographic range, this sexual life cycle is necessary for the propagation of the species. The completion of the life cycle in Southern California

requires 1 year in optimal environmental conditions and probably somewhat longer under other conditions.

North (1971) determined that kelp closest to an outfall disappears first and further regression spreads from this center. This pattern was the principal evidence suggesting a relationship between waste discharge and kelp disappearance.

The most likely cause of widespread deterioration appeared to be turbidity, but direct evidence is lacking. As suggested by Frey (1971), once deterioration of kelp areas has begun in polluted areas, reestablishment of kelp by natural mechanisms is nearly impossible so long as the pollutants continue to be released into the area. Conditions associated with sewage outfalls have led to the establishment of large sea urchin populations. The urchins not only destroy the remaining kelp through grazing but keep young plants from becoming established. Once the kelp is gone, the urchins are able to survive by living off the sewage discharge nutrients. The urchins can apparently absorb 50 percent of their minimum daily nutrient requirements from the surrounding water. This ability allows large urchin populations to continue to exist in areas that formerly contained kelp beds. Kelp beds can and have been restored by human transplanting and management, however.

Many environmental factors influence the distribution of Macrocystis beds. On a geographic level, temperature is the most important, but in local areas substrate, surf, and depth are the most important. Although kelp is limited to rocky substrate at exposed areas of heavy surf, it becomes established on a sand or mud substrate in relatively quiet waters where danger of burial by sediment shifts is small. Holdfasts of adult kelp can withstand some smothering, but stipes are sensitive to being enclosed or covered by silt. Shifting sediments are more of a hazard to juveniles which have small holdfasts that are easily buried.

The inner limit of a kelp bed often appears to be controlled by wave action. In calm, protected areas Macrocystis beds occur as shallow as 2 or 3 m (6 to 9 feet) or even appear intertidally. Along open coasts, the inner limit usually is at depths of 5 to 10 m (15 to 30 feet).

The outer limit of kelp beds is probably determined by light intensity at the bottom. In turbid waters, beds are limited to depths of 15 to 20 m (45-65 feet) while in clear waters they often occur at depths of 25 to 30 m (80-100 feet). The fact that the outer edge of kelp beds is typically even, whereas the inner edge is usually irregular, has caused the hypothesis that a single, fairly constant factor limits its outward distribution.

As discussed by North (1971), cyclical fluctuations in Macrocystis beds do not follow a single, well-defined pattern. He listed three kinds of regular changes, non-regular changes, and lack of changes. The latter occurs only from Santa Barbara to Point Conception on sandy bottoms.

According to North (1971), the niche filled by Macrocystis includes at least five roles:

- (1) Primary producer of organic matter.
- (2) Provides shelter and crevice environments.
- (3) Provides substrate for encrusting organisms.
- (4) Shades the bottom, giving rise to two separate effects:
 - a. Modifies vegetation by affecting photosynthesis.
 - b. Attracts animals that avoid bright light.
- (5) Competes with water in radiant energy absorption by means of a flotation mechanism.

Dawson (1966) emphasized that kelp forests contain associated algae throughout, although, as North (1971) has indicated, they are greatly reduced compared to hard-bottom areas outside the beds.

Although kelp beds look very much alike at the surface, there are usually striking differences on the sea floor, and the composition of associated algal species varies with location in accord with environmental factors including substrate, exposure, upwelling, temperature, depth, etc. (Dawson, 1966). Particularly where the surface canopy is not extremely thick (McFarland and Prescott, 1959) or in open patches within the bed, there occurs a multilayered vegetative cover (Dawson, 1966) which is very broadly similar to a multi-layered tropical forest. Below the thin surface canopy Dawson described an intermediate layer consisting of species that are stalked or tree-like having heavy, erect stipes which hold the fronds off the bottom. The third or bottom layer consists of short forms of brown, green, and red algae in varying degrees of profusion and array of forms. Dawson (1966) indicated jointed corallines are the most ubiquitous, growing both outside and in the deep shade of the canopy. Crustose calcareous corallines occur as pink layers on bottom rocks and often cement together pebbles, shells, and sand to form nodules and areas of rough pavement which can increase the suitable area for kelp attachment.

Another habitat is attachment on the kelp itself. Epiphytic algae receive stiff competition from encrusting annuals and are confined primarily to senile tissues of the kelp.

The "hard" substrate created by kelp plants greatly increases the habitat available to filter feeding animals (invertebrates). Phytoplankton are captured by sessile filter feeding invertebrates which encrust the solid surfaces in kelp beds. Unlike many other large brown algae, including Nereocystis and Pelagophycus, which concentrate the laminal surfaces in one region of the water column, the Macrocystis assemblage is unique because it has large surface areas for attachment at all levels. The attached sessile invertebrates, therefore, can utilize phytoplankton from the entire water column.

An extensive list reported by North (1971), of invertebrates associated with a kelp bed includes over 625 species. The 74 invertebrates considered by North to be common are summarized in Murray (1974), U.S. Department of the Interior (1975, 1978c). A total of over 810 kinds of organisms are associated with kelp beds in Southern California and northern Baja California, including 128 species of macrophytes (20 common). Quast (1968) listed 57 species of fishes. The majority of these species may not have an obligatory relationship with giant kelp, but they utilize every conceivable nook and crevice of the plant

and adjacent area, thereby greatly increasing the total habitat available to them.

Because the lifespan of a kelp blade is only 2 to 4 months the sessile fauna colonizing these surfaces are also short-lived. These species are primarily forms that settle, develop and reproduce rapidly.

The heavy shade of the sea floor created by the kelp canopy causes a drastic reduction of the standing crop of shorter algae. This barren substrate becomes overgrown with sessile invertebrates, frequently clustered on top of each other to depths of 10 to 20 cm (3.9 to 7.8 inches). Because of the more enduring substrate, longer-lived species are found. The holdfast, with its labyrinth of substrates, provides a very important habitat on the sea floor.

Prominent filter feeders in kelp beds, in their usual order of importance, are: bryozoans, especially Membranipora; hydroids; crustaceans; tunicates; and sponges. Also usually present, particularly on the bottom, are bivalves, gorgonian corals, and polychaete worms.

3. Fish and Fisheries

a. Fish: The marine environment off Southern California is rich in fish life. Of the 562 species of coastal marine fishes known to occur in California (Miller and Lea, 1972, 1976), 485 species (87 percent) are found in Southern California waters. These counts do not include all of the deep-sea fishes, so the total number of species in Southern California actually exceeds 485.

The coastal region off California constitutes a transition zone between southern warm-temperate, sub-tropical waters and northern cold-temperate waters. Both warm-water and cold-water fishes are found either seasonally or year-round off Southern California (Horn, 1974a). In addition to temperature, fish distribution depends on light, currents, food availability, and the presence or absence of predators (Southern California Coastal Water Research Project, 1973).

The marine environment off Southern California can be divided into two main regions (Horn, 1974a): 1) the mainland and island shelf including offshore banks and ridges, and 2) the deep sea basins. While these designations are useful, the regions are not mutually exclusive. Overlap in species composition is apparent, particularly in transition areas such as the deep shelf and continental slope.

The mainland and island shelf region is generally located nearshore, in water depths of less than 200 m (656 feet). The northern anchovy (Engraulis mordax) is one of the most abundant species in the region and is important to the area because it occupies a central position in the trophic structure of coastal waters. Rockfish and flatfish are dominant in the demersal fauna. Special habitats for species in the shelf region include kelp beds, bays, estuaries, and man-made structures such as harbors and oil platforms.

Many deep-sea fishes undergo periodic vertical migrations and, therefore, may be found in the upper 100-500 m layer of the ocean. However, they are members of a rather distinctive group since they live at least part of their lives in waters several hundred to thousands of meters deep. These fishes are generally small (<300 mm long), black or dark with silvery reflective sides and frequently with luminescent organs. Members of the families Myctophidae (lanternfish), Bathylagidae, and Gonostomidae are the most abundant deep-sea fishes off Southern California, and they occupy central positions in oceanic food webs. These families, especially the Myctophidae, appear to occupy important positions in the trophic structure of offshore waters comparable to that of the anchovy in shallow, more inshore waters (Horn, 1974a).

A third recognized region is the general pelagic zone, including the upper 150 m of the ocean known as the epipelagic zone. Epipelagic fishes occur in the upper layers of the ocean over both the shelf and deep basins, and some of the species are trophically linked to organisms from both regions. Since pelagic fishes frequently occur in more than one of the adaptive zones or habitats discussed above, no strict categorization has been made (Horn, 1974a).

Nektonic invertebrates are less well studied and less well known than are the fishes. Most important to the pelagic ecosystem are pelagic red crabs belonging to the decapod family, Galatheidæ (USDI, 1979). Other important species include pink shrimp (Pandalus jordani), bay shrimp (Crago spp.), spot prawn (Pandalus platyceros), ridgeback prawn (Eusicyonia ingentus) and market squid (Loligo opalescens).

More detailed descriptions of the fishes and nektonic invertebrates of Southern California are given by Horn (1974a), and USDI (1978a, 1979).

b. Commercial Fisheries: California is an important center for commercial fishing interests. In 1976, the most recent year for which economic data are available, one billion pounds of fish and shellfish worth \$249 million were landed or shipped into California (Oliphant, 1979). This value represents the money paid to the fishermen. The true value of the fishing industry is much greater due to the contributions of the support, processing, transportation, and marketing industries.

The total annual landings and shipments of fish into California varies considerably from year to year (Figure III.B.3.b-1), depending in part on fish availability, market demand, weather conditions, and harvest regulations. Most of these fish are landed into Southern California, primarily at Terminal Island (Table III.B.3.b-1). Species composition of the catch also varies from year to year (Figure III.B.3.b-2), but in recent years the primary species landed into Southern California have been yellowfin tuna, northern anchovy, skipjack tuna, and jack mackerel. The most valuable species are yellowfin tuna and skipjack tuna (Figure III.B.3.b-3).

Fish and invertebrates are caught throughout most of the Southern California Bight (Figure III.B.3.b-4). Purse seining for northern anchovy is prevalent from the Santa Barbara Channel to Santa Catalina Island. Purse seining for jack mackerel occurs primarily near Tanner and Cortes Banks, San Clemente Island, and Santa Catalina Island. Trawling for bottom fish and shrimp occurs at present primarily in the Santa Barbara Channel at depths less than 400 meters, but this fishery is expanding to new areas and greater depths. The tuna catch is the result of a worldwide operation, with most of the fish being brought to Southern California from waters off Central America, South America, and West Africa. The locations of specific fishing areas are mapped by the California Department of Fish and Game (1980).

In 1977, the Fishery Conservation and Management Act of 1976 (Public Law 94-265) was implemented giving the United States jurisdictional control and management responsibility for all fisheries except migratory tuna within a continuous distance of 200 miles of the coast. The Pacific Fishery Management Council, in cooperation with the Department of Commerce, regulates the amount of harvest, harvest seasons, and type of gear to be used by foreign and domestic fishermen in Federal waters off California, Oregon, and Washington. In California State waters (0-3 miles from shore), the California Dept. of Fish and Game regulates fishing.

A number of Southern California seaweeds are of economic value. The giant kelp Macrocystis pyrifera occurs in dense stands (see Section III.B.2.b) and

TABLE III.B.3.b-1

MAJOR CALIFORNIA COMMERCIAL FISHING PORTS BASED ON THE
AVERAGE WEIGHT AND ON THE AVERAGE VALUE OF FISH
LANDINGS FROM 1972-1976.^a

Port	Weights (lbs.)	Percent (%) Of State Total	Port	Value (\$)	Percent (%) of State Total
Terminal Island ^b	483,911,092	63.8	Terminal Island ^b	74,668,035	58.6
San Diego ^b	80,890,944	10.7	San Diego ^b	21,366,707	16.8
Port Hueneme	44,030,030	5.8	Eureka	6,545,576	5.1
Eureka	26,799,272	3.5	Fort Bragg	3,445,426	2.7
San Pedro ^b	21,636,531	2.9	Crescent City	3,229,604	2.5
Monterey	19,184,751	2.5	San Pedro ^b	2,469,848	1.9
Moss Landing	13,642,747	1.8	Monterey	2,147,099	1.7
Fort Bragg	13,420,208	1.8	Moss Landing	1,895,835	1.5
Crescent City	13,111,971	1.7	Bodega Bay	1,583,579	1.2
Bodega Bay	12,579,217	1.7	Santa Barbara	1,558,370	1.2
San Francisco	9,192,210	1.2	San Francisco	1,528,776	1.2
Santa Barbara	7,165,858	0.9	Morro Bay	1,445,080	1.1
Morro Bay	5,649,170	0.7	Port Hueneme	1,111,707	0.9
All Other Ports	6,960,440	0.9	All Other Ports	4,459,737	3.5
Total for State	758,174,441		Total for State	127,455,379	

^aSource: The most recent California Marine Fish Landings published by the California Dept. of Fish and Game.

^bFrom 1977-1980, an average of 397.7 million pounds of fish worth \$103.1 million were landed at San Pedro/Terminal Island and 162.0 million pounds of fish worth \$71.6 million were landed at San Diego (U.S. Dept. of Commerce, 1981). These were the leading U.S. ports in terms of value.

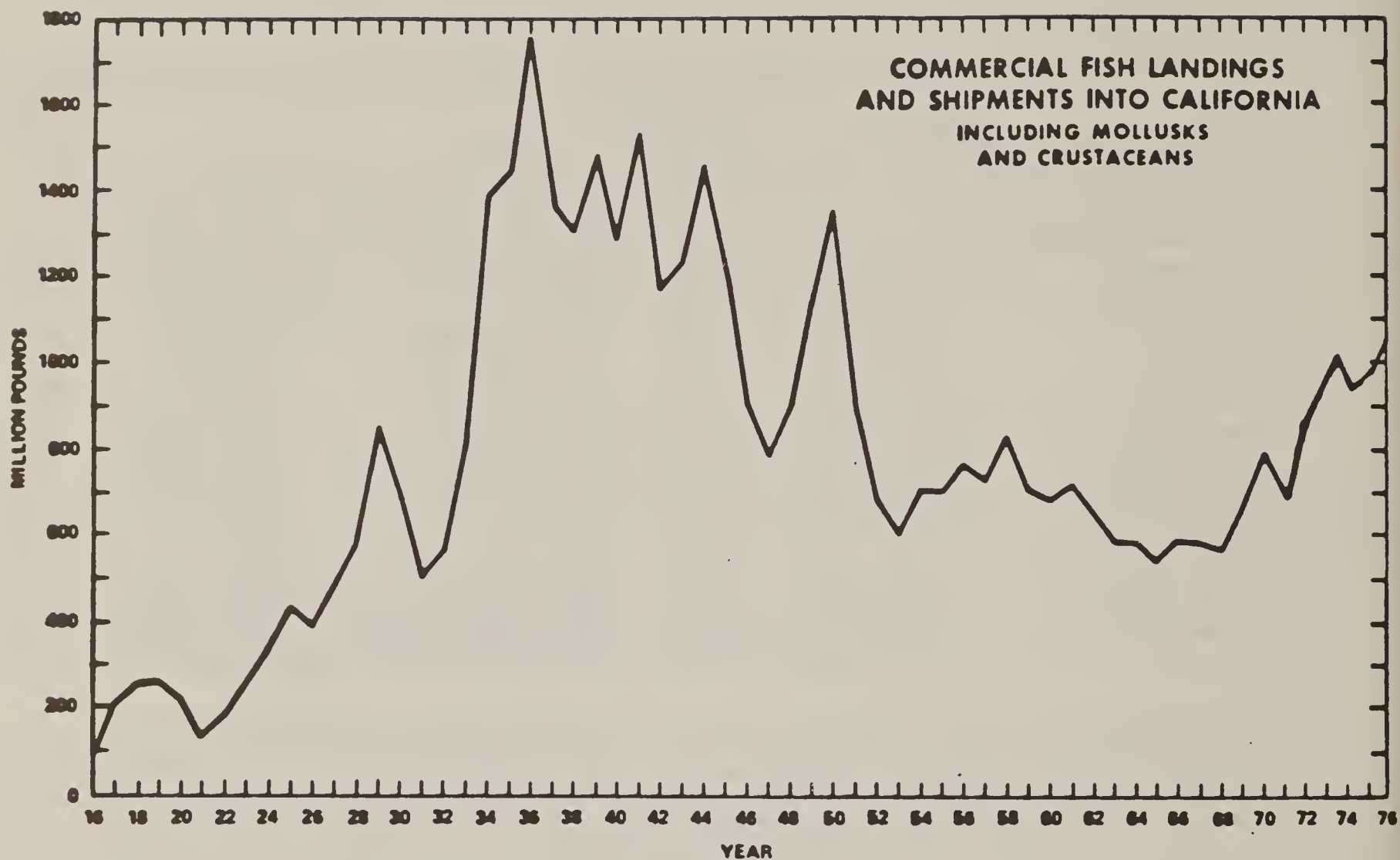


Figure III.B.3.b-1 Total annual landings and shipments into California of commercial fish, mollusks and crustaceans. Sardine deliveries to reduction ships from 1930-1938 are included. Since 1965, tunas are the only species included in shipments.^a

^aSource: The most recent California Marine Fish Landings published by the California Dept. of Fish and Game.

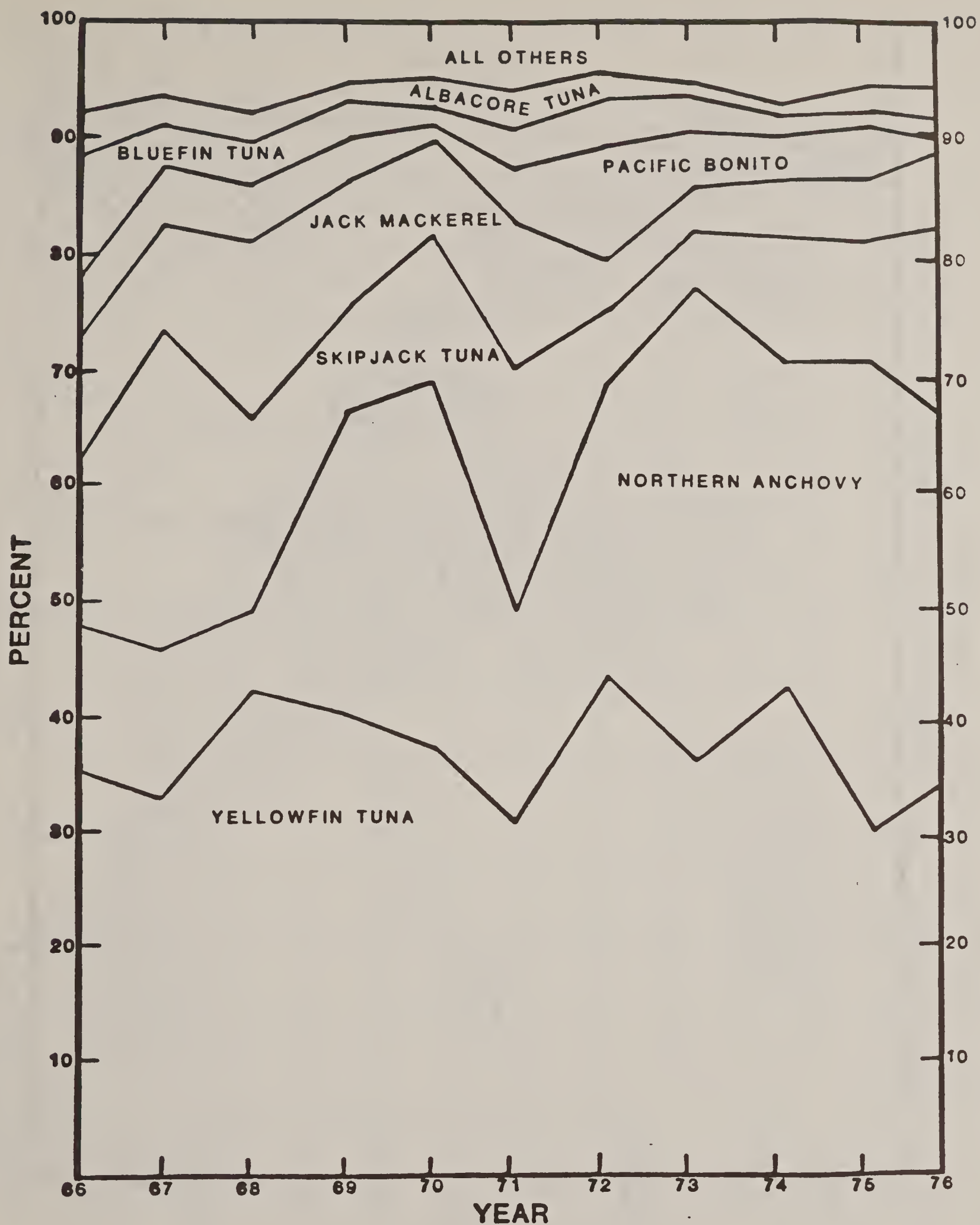


Figure III.B.3.b-2 Composition (%) of the Southern California commercial fish landings from 1966-1976 based on weight.^a

^aSouthern California refers to CDFG's Santa Barbara, Los Angeles and San Diego areas.

Source: The most recent California Marine Fish Landings published by the California Dept. of Fish and Game.

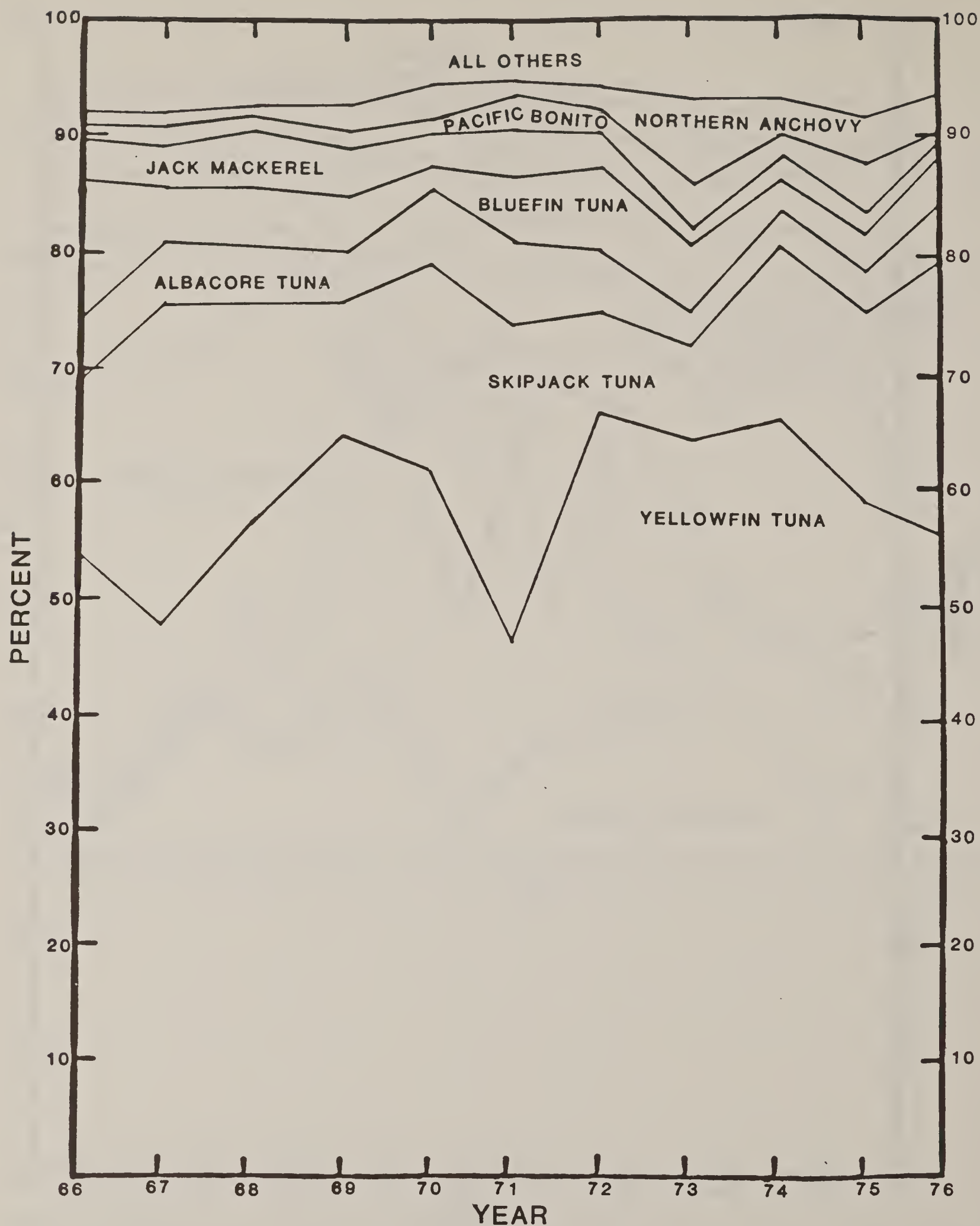


Figure III.B.3.b-3 Composition (%) of the Southern California commercial fish landings from 1966-1976 based on value.^a

^aSouthern California refers to CDFG's Santa Barbara, Los Angeles and San Diego areas.

Source: The most recent California Marine Fish Landings published by the California Dept. of Fish and Game.

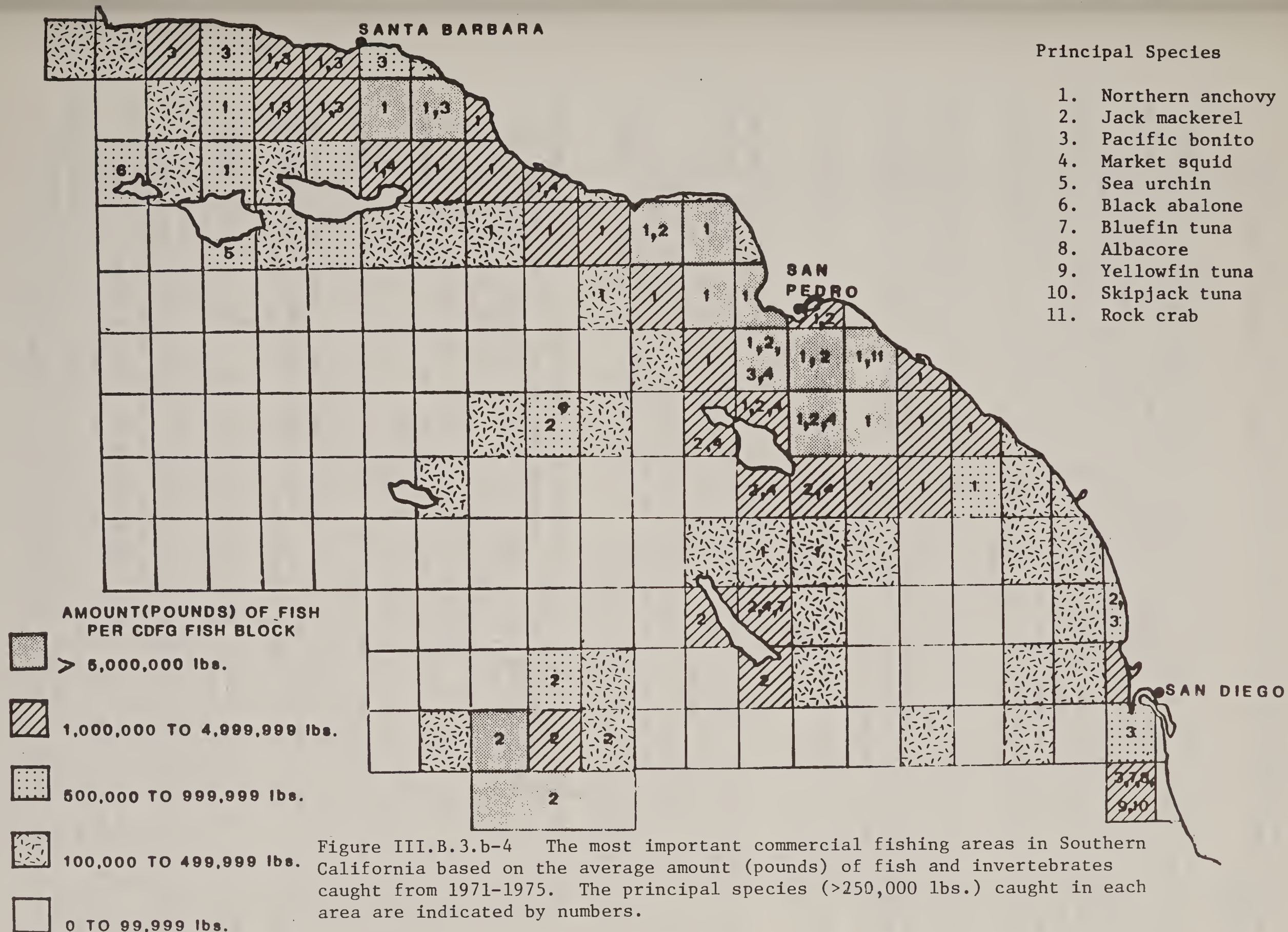


Figure III.B.3.b-4 The most important commercial fishing areas in Southern California based on the average amount (pounds) of fish and invertebrates caught from 1971-1975. The principal species (>250,000 lbs.) caught in each area are indicated by numbers.

Source: The most recent commercial catch by origin data available from the California Dept. of Fish and Game (unpublished).

can be conveniently harvested by specially designed ships known as kelp cutters.

In recent years, over 150,000 tons of kelp (primarily M. pyrifera) have been harvested (Figure III.B.3.b-5). Although a large number of useful products can be extracted from M. pyrifera, the greatest demand is for a polysaccharide called algin. Algin is used as a suspending, thickening, emulsifying, stabilizing, film-forming, and water-holding agent in food, beverage, pharmaceutical, cosmetic, paint, rubber, and other industries. Several species of red algae have been utilized by man either directly as animal and human food or as a source for extracted materials such as agar and carrageenin. However, this resource is underutilized because collection must be by hand to avoid taking species of no economic value that grow next to the desired plants.

Mariculture in Southern California is in its infant stages compared to other parts of the State, other States, and other countries. Most efforts in Southern California are focused on research and development. Studies are being conducted with kelp, abalone, lobster, shrimp, northern anchovy, Pacific sardine, Pacific mackerel, and striped bass.

More detailed information on commercial fisheries in Southern California is given by Horn (1974b), and USDI (1978a, 1979).

c. Sport Fisheries: Sportfishing is a very important recreational activity throughout Southern California. Five fishing methods predominate: shore, pier, private boat, commercial passenger fishing vessel (party-boat), and diving. Currently, the National Marine Fisheries Service and the California Department of Fish and Game are conducting a survey of marine recreational fisheries with an emphasis on shore, pier, and private boat fishing. The results of the first 6 months of this study (July to December 1979) should be available in the near future.

Comprehensive historical data on sportfishing are available only for commercial passenger fishing vessels. In 1979, the most recent year for which data are available, 5.1 million fish were caught in Southern California. This is the largest catch ever recorded (Figure III.B.3.c-1). Although in previous years California barracuda, Pacific bonito, kelp bass, and sand bass dominated the catch, the most important components now are rockfish and Pacific mackerel (Figure III.B.3.c-2). The areas where the largest catches occur and greatest efforts are expended are near San Pedro, San Diego, and the Coronado Islands (Figures III.B.3.c-3 and III.B.3.c-4). Rockfish are caught near all of the islands and the mainland. Kelp bass are taken primarily near San Pedro, Santa Catalina Island, San Clemente Island, San Diego, and the Coronado Islands. Pacific mackerel are taken primarily along the mainland between San Pedro and San Diego. The locations of specific fishing areas are mapped by Squire and Smith (1977) and the California Department of Fish and Game (1980).

Shellfish are either taken by skin and scuba divers or from the shore at low tide. The principal species taken are abalones (Haliotis spp.), rock scallops (Hinnites multirugosus), spiny lobsters (Panulirus interruptus), mussels (Mytilus spp.), crabs (Cancer spp.), and clams. Although diving data from private boats and shore are not available, dive boats report (California Dept. Fish and Game, unpublished data) that abalones are taken primarily near Anacapa Island, Santa Cruz Island, Santa Catalina Island, and San Clemente Island. Rock scallops are frequently taken near Anacapa Island and Santa Cruz Island. More detailed information on sportfishing in Southern California is given by Horn (1974b), Squire and Smith (1977), and USDI (1978a, 1979).

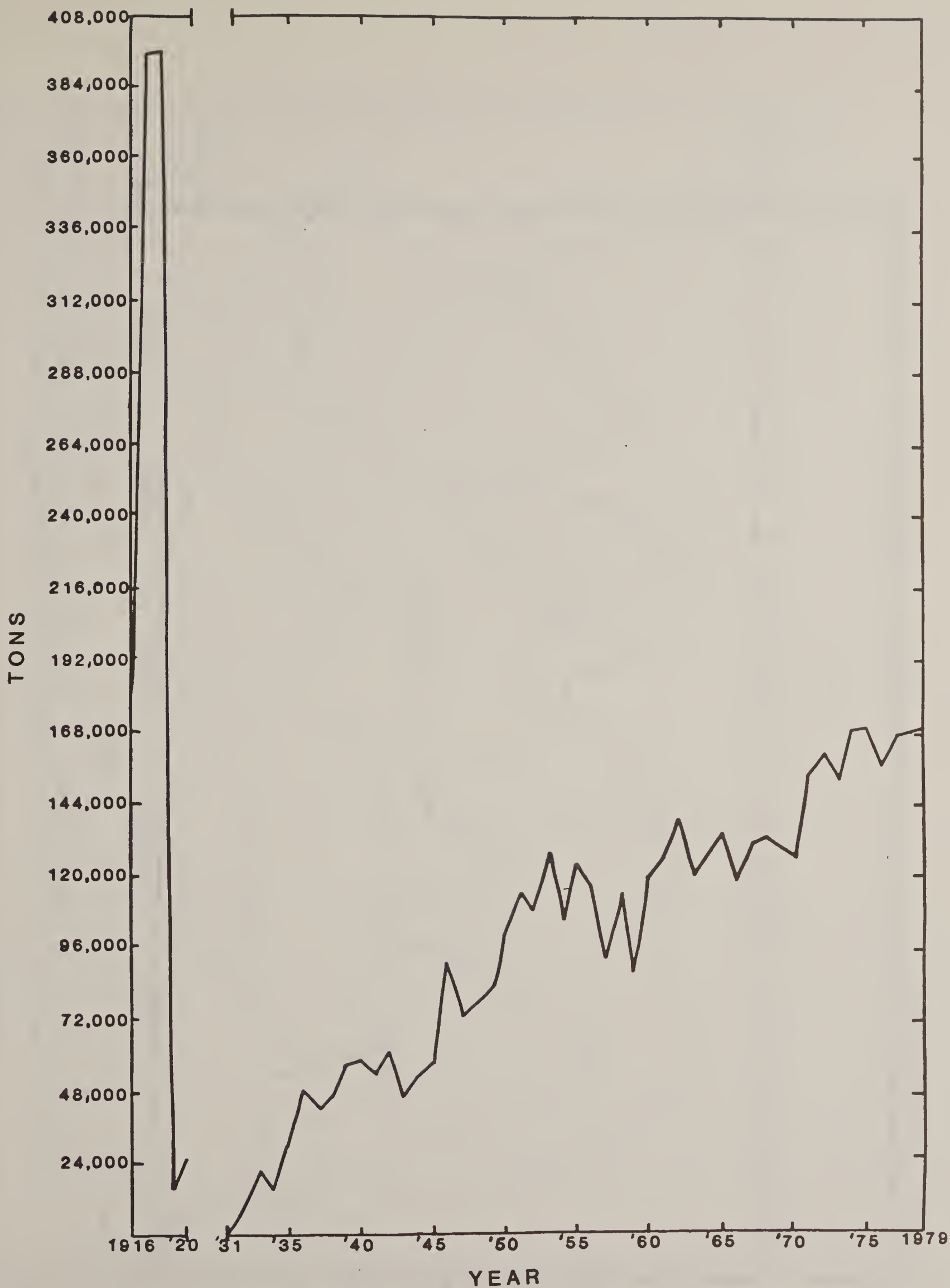


Figure III.B.3.b-5 Annual kelp harvest.

Sources: 1916-1976 data from Oliphant (1979.).

1977-1979 data from California Dept. of Fish and Game (preliminary).

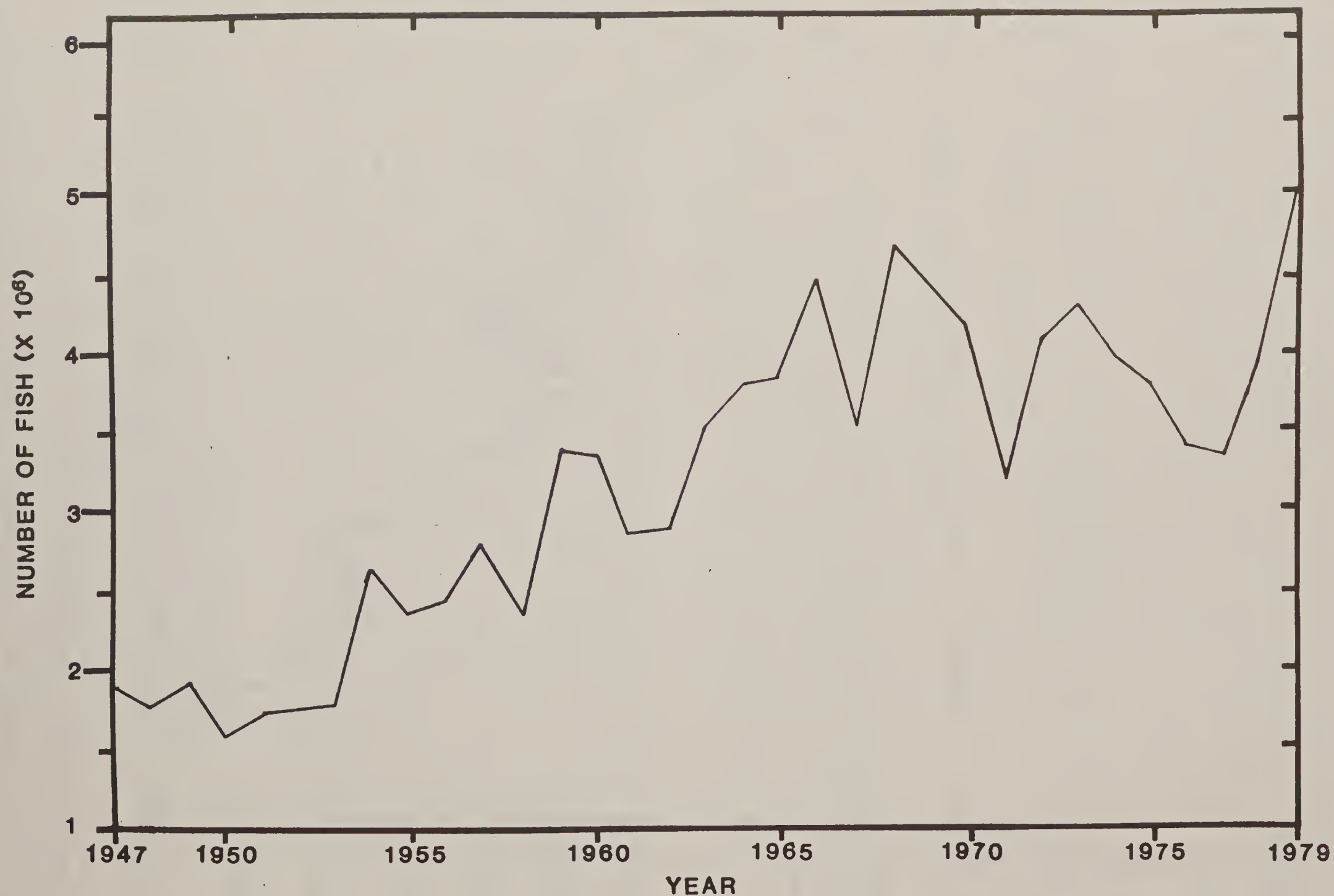


Figure III.B.3.c-1 Annual number of fish landed from Point Conception to the California/Mexico border by the commercial passenger fishing vessel fleet.

Sources: 1947-1967 data from Young (1969).
1968-1979 data from California Dept. of Fish and Game (unpublished).

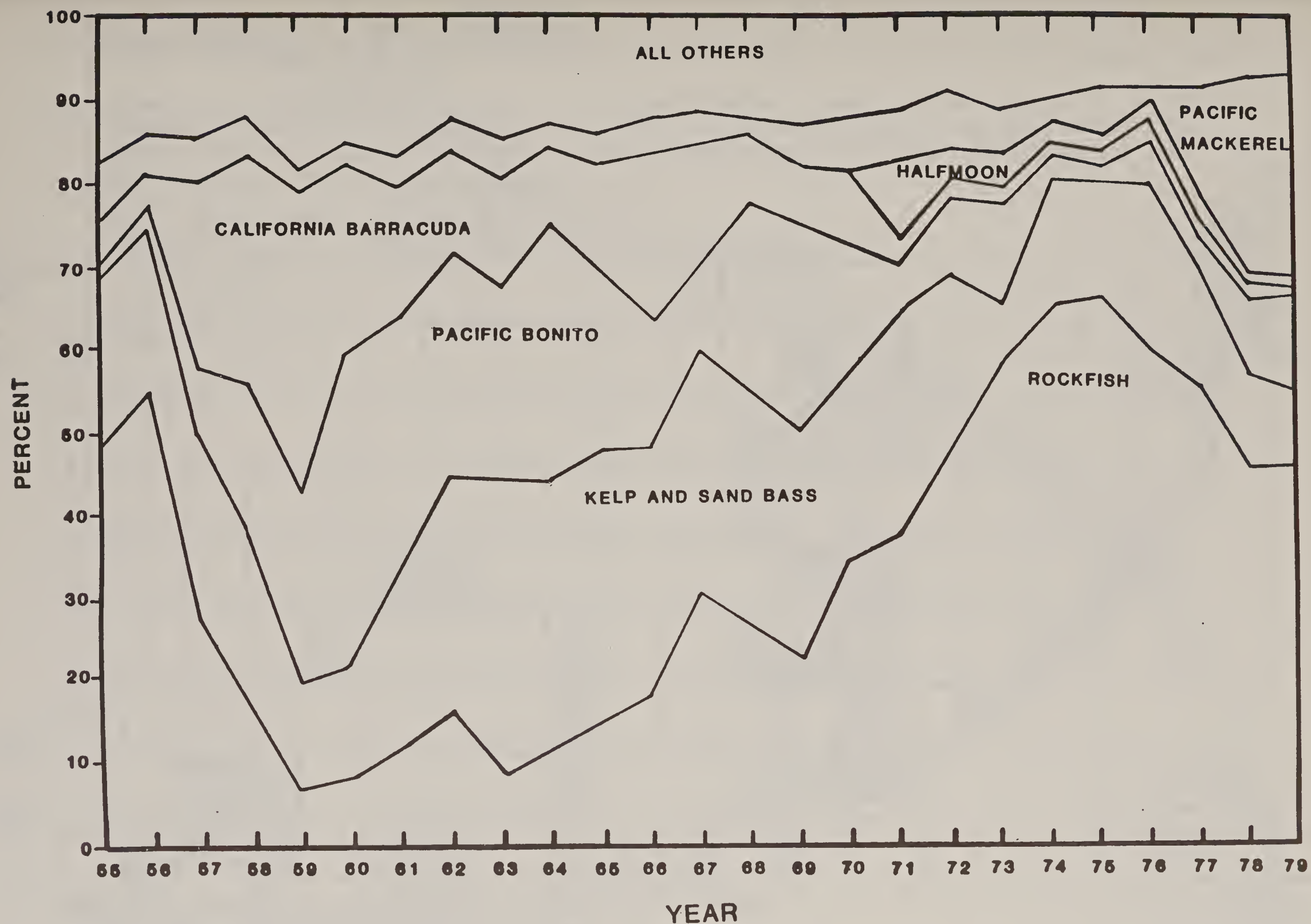


Figure III.B.3.c-2 Composition (%) of the commercial passenger fishing vessel fleet's catch between Point Conception and the California/Mexico border from 1955-1979 based on number of fish.

Sources: 1955-1971 data from Miller and Hardwick (1973).
 1972-1978 data from California Dept. of Fish and Game (unpublished)
 1979 data from California Dept. of Fish and Game (preliminary).

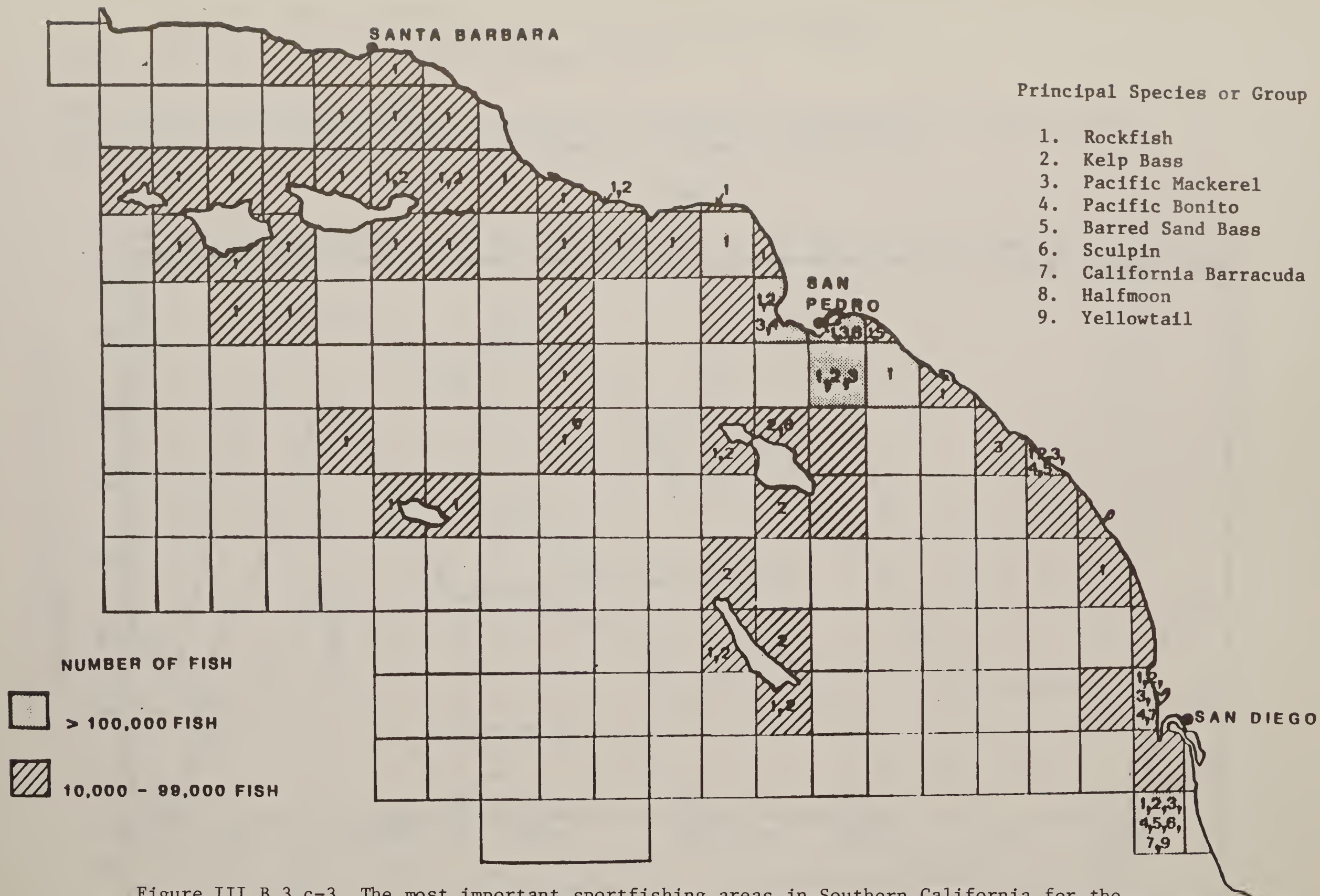


Figure III.B.3.c-3 The most important sportfishing areas in Southern California for the commercial passenger fishing vessel fleet based on the average number of fish caught from 1974-1978. The principal species (>10,000 fish) caught in each area are indicated by numbers.

Source: The most recent marine sport catch data by origin available from the California Dept. of Fish and Game (unpublished).

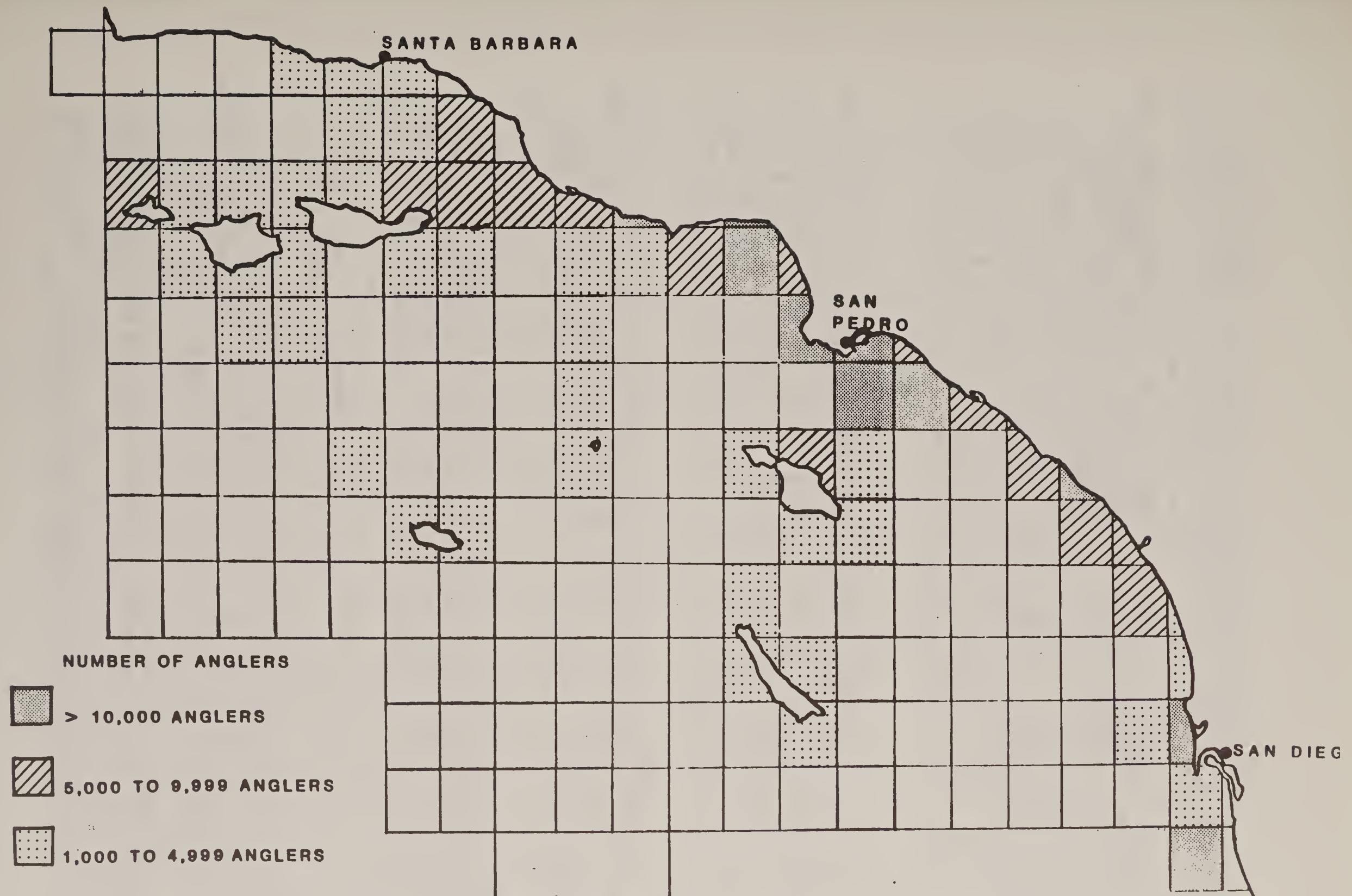


Figure III.B.3.c-4 The most important sportfishing areas in Southern California for the commercial passenger fishing vessel fleet based on the average number of anglers per area from 1974-1978.

Source: The most recent marine sport catch data by origin available from the California Dept. of Fish and Game (unpublished).

4. Marine Mammals and Seabirds: A thorough discussion of the seabirds and marine mammals of the Southern California Bight (SCB) can be found in a series of publications written by scientists from the University of California at Santa Cruz and Irvine. These publications were the result of a 3-year study of the seabirds and marine mammals of the SCB funded by BLM. The authors of these 1978 publications are: Dohl, et al., a and b; Bonnell, et al.; Briggs et al.; and Hunt, et al. A summary report of the SCB marine mammals and seabird surveys has also been completed (Bonnell, et al. 1980). POCS Technical Paper No. 81-9 (U.C. Santa Cruz, 1981) provides a summary of the 3-year marine mammal and seabird survey completed within the SCB. The Channel Island environmental assessment of the natural and cultural resources management plan (1980), prepared by the National Park Service, gives an excellent account of the terrestrial biology of San Miguel, Anacapa, and Santa Barbara Islands. The following discussion is taken in part from Dohl, et al., 1978b.

The large and complex marine mammal and bird community of the Southern California Bight ranks as one of the most diverse faunas in north temperate waters. Not only does the SCB support resident populations, of which several have worldwide or regional significance, but it is also an area where many wide-ranging species overlap. The SCB lies along the migration routes of important species such as the California gray whale, the northern fur seal, and many birds that pass through the area every year.

The warm-blooded inhabitants of the California Current Region--marine mammals and seabirds--comprise two families of seals and sea lions (Pinnipedia) and one otter, six families of whales, dolphins, and porpoises (Cetacea), and about fifteen families of birds. Some enjoy tremendous popularity with the environmentally-aware public; many are so secretive or live so far offshore as to draw little or no attention from shorebound humans.... Environmental temperatures are very cool for warm-blooded animals, and special physiological and behavioral mechanisms for heat retention have evolved; these animals are so adept at conserving heat that when they come ashore during breeding season, as do all pinnipeds and seabirds, they may have serious problems in cooling themselves in the air and sunlight.

Natural predators of the largest marine mammals are few. Only killer whales and man prey on large whales, but smaller seals and sea lions fall prey to sharks and the above predators as well. Predators on seabirds are more numerous, including several terrestrial and avian carnivores and even rats and mice. Freedom from terrestrial predators and man appears to be one of the major reasons that pinnipeds and seabirds utilize offshore islands for breeding and rearing of their young.

Populations of many marine mammal and seabird species have been exploited by man for centuries; overexploitation and extinction of these animals became increasingly common after the fifteenth century. Protection from hunting and egg collecting has led to reestablishment of some species to numbers approaching their former populations...

In the following three pages the marine mammal and seabird fauna of the Southern California Bight (SCB) is introduced. (See Figure III.B.4-1 and Table III.B.4-1.)

The Pinnipeds. Five species of pinnipeds inhabit the SCB on a regular basis. One additional species, the Guadalupe fur seal, is a rare visitor seen in summer when young males join resident sea lions and northern fur seals on their breeding grounds, and in winter when animals range farthest from their home grounds on Isla de Guadalupe, Mexico. Guadalupe fur seals were once numerous in the waters of the SCB; their bones are common in Indian kitchen middens on the offshore islands. Populations of both the Guadalupe fur seal and northern fur seal were totally extirpated from the SCB by sealers in search of pelts. Similarly, populations of California sea lions, Steller sea lions, and northern elephant seals were decimated for the oil which could be rendered from their blubber. In historic times, California sea lion populations were reduced to only a few hundred animals along the coast of California, and the northern elephant seal was considered extinct at the turn of the century, prior to its rediscovery on remote Isla de Guadalupe. Populations of the California sea lion and the northern elephant seal have been healthy and growing and are seen in great numbers on rookery islands in the SCB during their annual breeding seasons. California sea lions number over 50,000 in the SCB in summer months when pups are born, and northern elephant seals number over 12,000 in the winter when they haul out for pupping and mating. Each of these species has over 40 percent of the world population centered among the islands of the SCB. Though Guadalupe fur seals are rare in this area, their cousins, the northern fur seals, established a colony on San Miguel Island in the mid 1960s that has undergone an explosive increase in population size and pup production. Although small relative to the enormous numbers of California sea lions found on the same beaches and rocks, the northern fur seal population numbers over 4,000 at present and will soon become an important element in the SCB fauna.

The Steller sea lion population has apparently continued to drop in numbers since 1938. During this study, a few Steller sea lions were seen (never more than 20) and fewer than 10 pups were born in each of the 3 survey years (Bonnell, et al., 1978). Fewer than 10 Steller sea lions, including 2 pups, were seen in 1980 (Stewart, 1980). Harbor seals haul out on all the islands in the SCB and at many locations on the mainland. The SBC population presently appears to be growing slowly, and is estimated to number 3,000 animals (Bonnell, et al., 1978).

As in the case of marine birds, pinnipeds breed and rest on the island beaches and rocks of the SCB and feed in the inshore and offshore waters. Some animals, such as harbor seals and California sea lions, commute daily from their traditional hauling grounds to open-water foraging areas over shallow island shelves and offshore banks and ridges. Northern fur seals and northern elephant seals forego hauling grounds except when necessary for breeding or molting, and reside solely in offshore waters, as at home there as the whales and porpoises.

The Cetaceans. Twenty-seven representatives of this order inhabit the waters of the SCB. Included among these are 6 species of baleen whales (in 1981 a

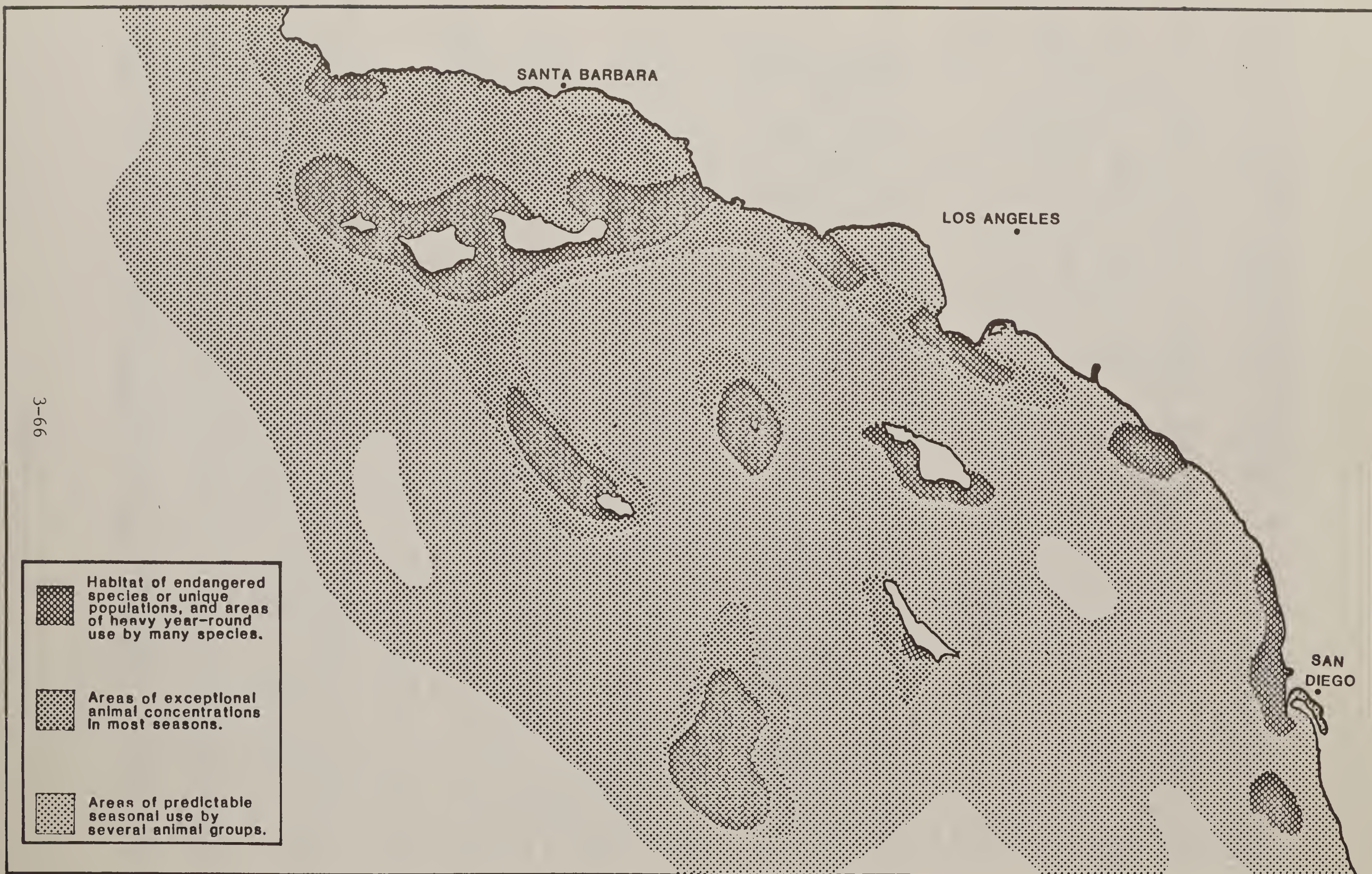


Figure III.B.4-1 Areas of Biological Significance to the Marine Mammals and Seabirds of the Southern California Bight

TABLE III.B.4-1

IDENTIFICATION OF AREAS OF BIOLOGICAL SIGNIFICANCE
TO THE MARINE MAMMALS AND BIRDS OF THE SOUTHERN CALIFORNIA
BIGHT. (DISTANCES ARE APPROXIMATE; REFER TO FIGURE III.B.4-1
FOR AERIAL EXTENT OF SENSITIVE AREAS.)

DESCRIPTIONS OF ABUNDANCE ARE DERIVED FROM MEAN DENSITY OF
ANIMALS IN AREA RECORDED ON SHIP AND AERIAL TRANSECT SURVEYS;
THE TERM EXCEPTIONALLY HEAVY USE INDICATES THAT THE HIGHEST
DENSITY CATEGORY (>5 MAMMALS/KM² or >54.29 BIRDS/KM²) WAS
REACHED ON ALL OR MOST SURVEYS OF THIS AREA; THE TERM HEAVY USE
INDICATES THAT THE SECOND HIGHEST DENSITY CATEGORY (1-5 MAMMALS/
KM² OR 20 to 54.29 BIRDS/KM²) WAS REACHED ON ALL OR MOST SURVEYS
OF THE SPECIFIC AREA. OTHER DENSITY CATEGORIES USED TO DESCRIBE
ABUNDANCE IN LESS IMPORTANT AREAS OR SEASONS ARE MODERATE (0.31 TO
1.00 MAMMALS/KM² OR 2.71 TO 19.99 BIRDS/KM²), LOW (0.01 TO 0.30
MAMMALS/KM² OR 0.01 TO 2.70 BIRDS/KM²), AND VERY LOW (<0.01
ANIMALS/KM²).

<u>ZONE</u>	<u>AREA</u>	<u>SIGNIFICANCE</u>	<u>ZONE</u>	<u>AREA</u>	<u>SIGNIFICANCE</u>
Santa Barbara Channel	San Miguel Island and vicinity to 20 km in all directions.	Largest pinniped and seabird breeding colonies in the SCB: five species of breeding pinnipeds (including world's largest California sea lion and northern elephant seal rookeries and the only northern fur seal rookery in the U.S. outside of Alaska), three species of alcids and three species of cormorants (largest West Coast seabird colonies in the U.S. south of San Francisco); presence in all seasons of young of the year. Exceptionally heavy use of near-shore waters by foraging	Santa Barbara Channel (continued)	Anacapa Island, Anacapa Passage, and waters over the Ventura Shelf.	Second largest seabird breeding aggregation in the SCB and northernmost breeding colony of the Brown Pelican (endangered). Exceptionally heavy use by foraging birds, pinnipeds, and cetaceans. Migratory pathway of gray whales (endangered) and waterfowl.
				Waters within a 15 km radius of	Heavy use by foraging and migratory seabirds, especially shearwaters and waterfowl. Concentration of migratory gray whales (endangered).

TABLE III.B.4-1 (Cont.)

<u>ZONE</u>	<u>AREA</u>	<u>SIGNIFICANCE</u>	<u>ZONE</u>	<u>AREA</u>	<u>SIGNIFICANCE</u>
		cetaceans (Pacific whitesided and common dolphins), pinnipeds, and resident and migrant seabirds. Seasonal gathering area of humpback whales (endangered), and migratory path of gray whales (also endangered).	Santa Rosa Ridge	San Nicolas Island to a radius of 10 km.	Second largest pinniped rookery in the SCB; year-round presence of pups. Major seabird breeding and roosting sites. Exceptionally heavy use of nearshore waters by foraging birds and pinnipeds.
	Shores of Santa Rosa and Santa Cruz Islands and out 10 km.	Major breeding and roosting colonies of seabirds, particularly cormorants, gulls, alcids, and Brown Pelicans (endangered), and pupping grounds of harbor seals. Exceptionally heavy use of nearshore waters by foraging birds and pinnipeds.		Santa Rosa Ridge from San Nicolas Island to Santa Rosa Island.	Exceptionally heavy use by foraging birds (shearwaters, gulls, alcids), pinnipeds (sea lions, elephant seals), and cetaceans (common, white-sided, and northern right whale dolphins). Major migration pathway of large baleen whales (endangered); area of greatest concentration of cetaceans in the SCB.
Santa Cruz Basin	Santa Barbara Island to a radius of 20 km	Major breeding colonies of nine seabird species (possibly the world's largest Zantus' Murrelet colony and the only U.S. nesting site of the Black Storm-Petrel). Important pinniped breeding rookeries and seasonal hauling grounds. Exceptionally heavy use of surrounding waters by foraging seabirds and pinnipeds.	San Diego Basin (continued)	Islas Los Coronados and Coronados Escarpment	Important breeding colonies of pinnipeds and seabirds, especially Brown Pelicans (endangered). Extensive foraging by massive cetacean schools (particularly common dolphins), seabirds (Brown Pelicans), and pinnipeds.
Santa Cruz Basin (continued)	Eastern sill of Santa Cruz Basin.	Major concentration of cetaceans especially minke and pilot whales and several species of porpoises.	San Clemente Ridge	San Clemente Island to a radius of 10 km.	Sea lion breeding rookery on west side, major seabird (including endangered Brown Pelican) roosts at north end.
Santa Monica Basin	Waters within 15 km radius of Point Dume.	Migration pathway of gray whales (endangered) and waterfowl.	Tanner-Cortes Banks	Tanner-Cortes Banks to north rim of San Nicolas Basin.	Major year-round foraging area for several species of cetaceans, sea lions, and migrant and wintering seabirds.

TABLE III.B.4-1 (Cont.)

<u>ZONE</u>	<u>AREA</u>	<u>SIGNIFICANCE</u>	<u>ZONE</u>	<u>AREA</u>	<u>SIGNIFICANCE</u>
San Pedro Basin	Waters within a 10 km radius of Point Vicente.	Concentration of migrating gray whales (endangered) and seabirds. Extremely heavy use by wintering seabirds. Year-round residence of bottlenose dolphins and pilot whales.			
	Santa Monica Bay shoreline.	Extremely heavy year-round use by foraging seabirds.			
	Santa Catalina Island to 10 km seaward, especially to the south.	Major feeding grounds for cetaceans and area of maximum seasonal concentrations of pilot whales in the SCB. Migration pathway of gray whales (endangered). Pupping site for harbor seals. Major flyway for migrating loons and Brant.			
	Waters within 10 km of mainland.	Migration pathway of gray whales (endangered) and waterfowl.			
San Diego Basin	Waters surrounding Point Loma and north San Diego County.	Concentration of migrating gray whales (endangered). Extremely heavy use by wintering seabirds.			
	Waters within 10 km of mainland shore- line, especially between San Clemente and Dana Point.	Migration path of gray whales and waterfowl. Heavy seasonal concentration of common dolphins.			

pacific right whale was sighted by John Strikley in the Santa Barbara Channel), 4 species of toothed whales, and 17 species of smaller dolphins and porpoises. Cetaceans are wholly aquatic, often swimming and feeding at great depths often far offshore. Because they are not tied to shoreline breeding areas as are pinnipeds and seabirds, and infrequently beach on mainland shores, most cetaceans are very unfamiliar to people living along the coast. However, a few species, such as the California gray whale and bottlenose dolphin, are commonly seen nearshore and have attracted much public attention.

Large baleen whales feed by taking in huge mouthfuls of water and filtering out hundreds of planktonic organisms or small schooling fishes. They consume vast quantities of food and are therefore relatively scarce in the world's oceans. Several hundred years of intense whaling have further decreased their numbers. Porpoises and dolphins prey on individuals of a variety of schooling fish and squid, and may travel in herds, or pods, ranging in size from a few animals to several thousand. The food requirements of such large groups of these active, mobile animals are also very large.

Three or four cetacean species reside throughout the year within the SCB. These populations are relatively small when compared with the migratory elements of the same species that utilize the SCB seasonally. It is not yet possible to estimate the total number of young produced annually by these resident populations.

Most of the cetaceans seen in the SCB pass through during bi-annual movements; many species move inshore or toward the tropics in winter and travel to cooler, more productive waters in the summer. Predictable concentrations of these migrants are found near the northern Channel Islands in the spring and summer, along the Santa Rosa Ridge and east of San Clemente Island during summer, and along the mainland coast and near Santa Catalina Island during winter.

The Seabirds. The seabirds off Southern California comprise about 15 families and 80 species; they exhibit a wide array of body forms, life history patterns, and strategies for obtaining food, reproducing, and avoiding predation. Different species use the open ocean to different degrees; some stay away from land throughout the year and come ashore only for a few months to nest and rear their young, while others feed briefly at sea but remain on land for most of each day. Among the diverse strategies employed by seabirds for feeding on fish, squid, and planktonic crustaceans are: seizing prey at the surface while flying, dipping just beneath the surface, and actively pursuing prey underwater to depths as great as 80 to 100 m (see Table III.B.4-2).

Because seabirds are awkward on land and, therefore, subject to predation by terrestrial carnivores, they usually nest on islands, occupying traditional sites year after year. In the SCB, nesting colonies appear to be largest in areas free from human intrusion and island fox predation and where food resources are plentiful. Favorable wind and sun exposures combine to make colonies on northern island coasts the most "desirable" to surface-nesting species (especially cormorants and gulls), while those species that nest in burrows or vegetation (alcids) exhibit no such preference.

Table III.B.4-2

BREEDING SEABIRDS OF THE CHANNEL ISLAND

Bonnell, et al. (1980) noted that the predominant breeding species encountered in the northern Channel Islands include:

- Cassin's auklet	>11,000 pairs on San Miguel; 135 pairs on Santa Cruz
- Western gull	2,500 pairs on Anacapa; 580 pairs on San Miguel; 321 pairs on Santa Cruz; 15 pairs on Santa Rosa
- California brown pelican	76-417 pairs on Anacapa; 80 pairs on Santa Cruz
- Brandt's cormorant	900-1,500 pairs on San Miguel; 200-700 pairs on Santa Rosa; 67-103 pairs on Santa Cruz; 1-2 pairs on Anacapa
- Ashy storm-petrel	300-1,000 pairs on San Miguel; 51 pairs on Santa Cruz
- Pigeon guillemot	450 pairs on San Miguel; 1204 pairs on Santa Cruz; >125 pairs on Santa Rosa; 5 pairs on Anacapa
- Xantus' murrelet	75 pairs on San Miguel; 1 pair on Anacapa
- Pelagic cormorant	125-154 pairs on San Miguel; 60 pairs on Santa Rosa; 4-25 pairs on Santa Cruz; 1-2 pairs on Anacapa
- Double-crested cormorant	75 pairs on San Miguel; 3-15 pairs on Anacapa

Source: Bonnell, et al., 1980

Of the 17 species that have nested in the SCB, four do so only on the mainland (four species of terns) and two, the Common Murre and Tufted Puffin, have ceased to nest on the islands since the turn of the century. About 38,000 to 42,000 seabirds nest in the SCB every year.

The great majority of seabird species are not resident and either visit or migrate through the SCB on a seasonal basis. Migrating shearwaters and phalaropes number well into the millions during May and June, and almost as many birds are found in the SCB during the winter. The importance of these seasonal visitors to maintenance of stability of local populations nesting in other regions is not yet determinable. However, it is not unlikely that some seabirds are as "traditional" in their use of wintering areas as they are in selecting sites for reproduction.

Marine Mammal and Seabird Summary. The following are some of the major findings of the 3-year SCB Marine Mammal and Seabird Study (Bonnell, et al., 1980).

The waters and islands of the Southern California Bight support populations of over 110 species of marine mammals and seabirds. At maximum, over 75,000 pinnipeds and a similar number of cetaceans are present in the SCB, while over 2.5 million seabirds may pass through or reside in the area at one time. The location of the SCB at the periphery of the ranges of many species marks it as a zone of overlap of faunas which are characteristic of both temperate/subarctic and subtropical waters.

Five pinniped species and eleven seabird species breed and rear their young on the California Channel Islands; small numbers of four additional seabird species nest on the Southern California mainland. The adult breeding population of pinnipeds numbers around 32,000 individuals; 20,000 young are born each year. Approximately 40,000 nesting seabirds produce about 30,000-40,000 young annually. The greatest numbers of seals and sea lions breed and pup on the west end of San Miguel Island; San Nicolas Island ranks second among the islands in importance among pinniped rookeries, followed by San Clemente and Santa Barbara Islands. Nesting seabirds are also most numerous at San Miguel, followed by Anacapa, Santa Barbara, and San Nicolas islands. Smaller bird colonies are found on the larger islands.

Several pinniped and seabird breeding sites are of great worldwide or regional importance. Populations of California sea lions and northern elephant seals breeding within the SCB account for more than 40 percent of the world total of each species. San Miguel Island is the largest rookery site in the range of these species, and the only U.S. colony of northern fur seals outside the Alaskan waters. Santa Barbara Island harbors what may be the largest Xantus' Murrelet nesting colony in the world and the only U.S. nesting site for the Black Storm-Petrel. During 1975-1978 California Brown Pelicans nested in the U.S. only at Anacapa Island.

Cetacean reproductive patterns in the SCB are not well understood, although young of at least seven species (California gray whale, common dolphin, Pacific white-sided dolphin, bottlenose dolphin, northern right whale dolphin, Risso's dolphin, and pilot whale) were seen during the study; common dolphin calves were seen in all seasons.

The waters of the SCB are regionally very important, because they encompass the coastal migration route of California gray whales and the offshore routes used by the blue, humpback, and fin whales. Additionally, common dolphins, bottlenose dolphins, and pilot whales are year-round residents of the SCB.

The diet and foraging areas of two seabird species, Cassin's Auklet at San Miguel Island and Xantus' Murrelet at Santa Barbara Island, are quite restricted. Heavy dependence on northern anchovies is displayed by Western Gulls at Santa Barbara Island and Brown Pelicans at Anacapa Island.

5. Endangered and Threatened Species: Table III.B.5-1 lists the Federally listed endangered or threatened species which may be affected by the proposed sale. This list is not inclusive of other endangered, threatened, or proposed endangered or threatened species known to occur in or near coastal areas of California (see Federal Register Vol. 45 No. 77, May 20, 1980) but for which it has been determined that no effects will be sustained as a result of the proposed sale. Such determinations have been made as part of formal and informal consultation of BLM with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, in compliance with Section 7 of the Endangered Species Act of 1973, as amended. Table III.B.5-2 lists the species recognized to be rare or endangered by the State of California.

The reader is advised to refer to Sections IV.C.6,-7,and-8 for information on the potential impacts to these threatened and endangered species.

Table III.B.5-1

FEDERALLY LISTED ENDANGERED OR THREATENED SPECIES
WHICH MAY BE AFFECTED BY THE PROPOSED SALE¹

Species	California Distribution	Status ²
American Peregrine Falcon (<u>Falco peregrinus anatum</u>)	13 territories along coastal Calif. Between Oregon and Mexico	Endangered
Southern Bald Eagle (<u>Haliaeetus l. leuco- cephalus</u>)	Mainly in interior Calif. Some found along the coast	Endangered
California Brown Pelican (<u>Pelecanus occidentalis californicus</u>)	Statewide along coast. Breeding only on Anacapa Island and Scorpion Rock in So. California	Endangered
California Least Tern (<u>Sterna albifrons browni</u>)	San Francisco Bay to Mexico (Breeding)	Endangered
Light-Footed Clapper Rail (<u>Rallus longirostris levipes</u>)	Salt marshes of Santa Barbara, Ventura, Orange, and San Diego Counties	Endangered
California Condor (<u>Gymnogyps californianus</u>)	San Luis Obispo Co.; Santa Barbara Co.; Sespe-Piru area of Ventura and Los Angeles Co.	Endangered
San Clemente Loggerhead Shrike (<u>Lanius ludovicianus mearnsi</u>)	San Clemente Island	Endangered
San Clemente Sage Sparrow (<u>Amphispiza belli clementae</u>)	San Clemente Island	Threatened
Santa Barbara Song Sparrow (<u>Melospiza melodia graminea</u>)	Santa Barbara Island	Endangered
Blue Whale (<u>Balaenoptera musculus</u>)	Offshore	Endangered
Fin Whale (<u>Balaenoptera physalus</u>)	Offshore	Endangered

TABLE III.B.5-1 (Cont.)

Species	California Distribution	Status ²
Gray Whale (<u>Eschrichtius robustus</u>)	Offshore and normally within 15 km of the mainland shore	Endangered
Humpback Whale (<u>Megaptera novaeanglinae</u>)	Offshore	Endangered
Pacific Right Whale (<u>Eubalaena glacialis</u> <u>japonica</u>)	Offshore	Endangered
Sei Whale (<u>Balaenoptera borealis</u>)	Offshore	Endangered
Sperm Whale (<u>Physeter catodon</u>)	Offshore	Endangered
Southern Sea Otter (<u>Enhydra lutris nereis</u>)	Santa Cruz south to Pismo Beach	Threatened
Guadalupe Fur Seal <u>Arctocephalus townsendi</u>	Offshore, Channel and San Nicolas Islands	Nominated
Leather-backed Turtle (<u>Dermochelys coriacea</u> <u>sechlegeli</u>)	Tropical and sub-tropical seas of west coast; some stray as far north as Vancouver Is., British Columbia	Endangered
Loggerhead Sea Turtle (<u>Caretta caretta</u>)	Offshore	Threatened
Green Sea Turtle (<u>Chelonia mydas</u>)	Offshore	Endangered
Island Night Lizard (<u>Klauberina riversiana</u>)	San Clemente Island	Threatened
El Segundo Blue Butterfly (<u>Shijimiaeoides battoides</u> <u>allynia</u>)	Los Angeles Co. Coastal Area near L.A. Airport	Endangered
Palos Verdes Blue Butterfly (<u>Glaucopsyche lygdamus</u> <u>paloverdesensis</u>)	Palos Verdes Peninsula, Los Angeles County	Endangered

TABLE III.B.5-1 (Cont.)

Species	California Distribution	Status ²
San Clemente Island Broom (<u>Lotus scoparius</u> ssp. <u>traskiae</u>)	San Clemente Island	Endangered
San Clemente Island Larkspur (<u>Delphinium kinkiense</u>)	San Clemente Island	Endangered
San Clemente Island Bushmallow (<u>Malacothamnus clementinus</u>)	San Clemente Island	Endangered
San Clemente Island Indian Paintbrush (<u>Castilleja grisea</u>)	San Clemente Island	Endangered
Santa Barbara Island Liveforever (<u>Dudleya traskiae</u>)	Santa Barbara Island	Endangered
Salt Marsh Bird's Beak (<u>Cordylanthus maritimus</u> ssp. <u>maritimus</u>)	Coastal Marshes of Santa Barbara, Ventura Orange and San Diego Counties	Endangered
Monoplacophoran Limpet (<u>Vema hyalina</u>)	Southern Santa Rosa - Cortes Ridge; 174-402 m	Nominated

¹As determined through consultation with U.S. Fish and Wildlife Service and National Marine Fisheries Service in compliance with Section 7 of the Endangered Species Act of 1973, as amended.

²Per Federal Register, 20 May 1980, Vol. 45, No. 97.

TABLE III.B.5-2

SPECIES DESIGNATED AS RARE OR ENDANGERED BY THE
STATE OF CALIFORNIA

Species	Distribution	Status ¹
Guadalupe Fur Seal (<u>Arctocephalus townsendi</u>)	Offshore, Channel and San Nicolas Islands	Endangered
Island Fox (<u>Urocyon titloralis</u>)	All SCB Islands except Anacapa and Santa Barbara	Rare
Belding's Savannah Sparrow <u>Passerculus sandwichensis</u> <u>beldingi</u>)	Santa Barbara, Ventura, Orange & San Diego County Coastal Marshes	Endangered
California Black Rail (<u>Laterallus jamaicensis</u> <u>coturniculus</u>)	Santa Barbara, Ventura, Orange & San Diego County Coastal Marshes	Rare

¹At The Crossroads 1978. State of California. Department of Fish and Game.

6. Sensitive Biological Areas

a. Estuaries and Wetlands: California is notable in having coastal embayments developed on a smaller scale than its counterpart area of the East Coast. This is particularly true of the coast of Southern California, where, because of arid climate and rather recent geological setting, there is no large river entering the sea. Consequently, most bays on the coast of Southern California are small. Furthermore, the absence of a coastal plain in Southern California has restricted the development of salt marsh to small areas bordering sheltered bays and lagoons.

Detailed coverage of the biological aspects of estuaries in Southern California can be found in Ju-Shey Ho (1974), Department of the Interior (1975, 1978b, 1978c). There are many good references of estuaries, in general, and of California in particular, including Jones and Stokes (1980).

The great influx of residents to Southern California during and following World War II, resulted in substantial alteration of the natural state of the southland. Nearly all of the bays and lagoons have been modified by the activities of man through construction of marinas and breakwaters, building of roads and railroads, dredging of channels, diversion of rivers, and use for waste disposal. Mugu Lagoon, Anaheim Bay, Upper Newport Bay, and Tijuana Estuary are some of the few major embayments that still remain in a relatively unaltered condition.

Estuaries and lagoons support animals recruited principally from the sea. Many neritic animal species use these areas as a nursery ground before migrating to the open sea (Vernberg and Vernberg, 1972). For example, shallow-water fishes such as the California halibut, the Pacific staghorn sculpin, the deepbody anchovy, and the gray smooth-hound are known to use Anaheim Bay as nursery habitats. Some permanent dwellers of Anaheim Bay that complete their life cycle in the bay are the topsmelt, the California killifish, the arrow boggy, and the diamond turbot.

However, with a profound alteration of coastal wetlands in Southern California, the extent they still serve as a nursery and feeding ground for neritic animals has not been determined. It is known that the fully developed commercial and residential marina-complex in Mission Bay has destroyed most, if not all, wildlife values there (Speth, 1969). Studies on the benthic animals of Anaheim Bay by Kawuling and Reish (1975) have demonstrated that the density of benthic polychaetes showed striking differences between the dredged and the undredged areas.

With the extreme alteration of much of the estuarine habitat of Southern California, coupled with the fact that some estuaries still function as nursery and feeding areas for important coastal fish, the remaining estuarine areas take on added importance to coastal ecology.

No two estuaries are alike and some generalizations are not true for certain estuaries. Nevertheless, estuaries typically have certain types of major habitats which are occupied by most of the same dominant species, or at least ecological equivalents, even though the distributions and relative amounts of

these habitats and associated species (particularly those with smaller populations) may differ.

The following overview of the habitats typical of the estuaries in California was taken primarily from the final draft of Jones and Stokes (1980); although the habitat classification was slightly modified to follow that used by California Fish and Game (1973). The major habitats of estuaries are: open water, tidal flats, including mudflats and sandflats, and eelgrass subtidal areas. Other important areas are the hard or rocky bottoms.

The tidal flat communities (sand and mud) are dominated by similar types of organisms. The primary producers are algae, including both microscopic diatoms and macroalgae (mudflats). The invertebrate fauna is characterized by two types of organisms: those living on the substrate (epifauna) and those living in the substrate (infauna). The epifauna includes snails, nematodes, crustaceans, and polychaete worms. The infauna includes bivalves, polychaete worms, crustaceans, and echiuroid worms. The fish community associated with sand and mudflats consists largely of bottom fish, including flounders, gobies, rays, and sharks. A number of species of birds feed intertidally, especially on mudflats during low tide.

Mudflat. The problems of respiration and feeding, and lack of attachment sites in the soft substrate of mud bottoms favor a specialized fauna. The mudflat community is composed of both epifaunal and infaunal organisms. Sunlight is converted into organic matter by the diatoms and algae, growing on the surface of the mud. Detritus produced within the community and transported from other habitats provides a major food source. Some herbivorous species and many small organisms graze on the algae. A few predatory species feed upon the mud surface, but most of the community is found within the mud. Adaptations to feeding include: living in burrows and filtering food particles from the water, or ingesting mud and extracting food. The birds and fish that feed on the mudflat may capture food on the mud surface or probe the mud. Most filter feeders construct burrows in the mud, while invertebrate predators feed on the surface of the mudflat or plow through the mud. Most fish that feed on mudflats are bottom fish. Mudflats are extremely important bird feeding areas and are utilized by numerous species.

The mudflat community is visited by many predatory species at different tidal stages. Various fish species remain in deeper channels during low tides, moving onto the mudflats to feed during high tides. The exposure of the intertidal mudflats at low tide allows many bird species to feed there. Shallow subtidal mudflats are also accessible to birds during low tide.

Tidal action carries nutrients from other habitats onto the mudflats. Detritus imported from the rocky bottom habitat and from the emergent vegetation habitat helps enrich the mudflats. Tidal currents are also important as a means of dispersal for sedentary organisms, which release planktonic larvae to be transported to other habitats or areas by this method.

Sandflat. Shifting of the sandflat substrate generally excludes primary producers from the habitat. The inhabitants of the sandflat community rely upon nutrients imported from other areas. Tidal action carries plankton and

suspended organic matter onto the sand flats, supporting the filter feeders and deposit feeders. Organisms are eaten by invertebrate predators, fish, and birds. Organisms migrate into the sandflat community in the same pattern as noted for mudflats. Fish move onto the sandflats to feed primarily during high tide, with birds foraging over the sandflats at low tide.

Open Water - Water Column. The open water community is dominated by pelagic organisms. The primary producers are members of the phytoplankton community, largely single-celled diatoms. The zooplankton community is dominated by copepods, but also includes other crustaceans, and the larvae of molluscs, crustaceans, and fish. Adult pelagic fish include anchovy, herring, smelts, silversides, and several anadromous species. Some of these species use the estuary on a seasonal basis, while others are resident species. A number of birds inhabit or feed in the open water environment. These birds include those that swim on the surface and those that dive from the air.

The open water community relies upon phytoplankton to convert sunlight into organic matter. Members of the zooplankton community feed on phytoplankton and suspended detritus.

The zooplankton community is an assemblage of many different types of organisms. Zooplankton can be divided into two major components, the holoplankton and the meroplankton. Holoplankters (permanent plankton) complete their entire life cycle as planktonic organisms. Meroplankton spend only a portion of their life cycle as planktonic organisms and include essentially all the important invertebrates of other habitats and many important fish species which utilize estuaries as a breeding ground or nursery ground.

Phytoplankton and zooplankton are consumed by many fish. Some of the fish may abandon their pelagic habits, at times, in order to move to the bottom and feed. Open water birds are almost entirely dependent on fish, feeding primarily on pelagic species.

Eelgrass Beds. Eelgrass beds may be present on a variety of substrates, occurring intertidally and subtidally. In addition to the quiet waters of an estuary, the primary factors governing the occurrence of eelgrass beds appear to be tidal exposure and light penetration. Eelgrass is not tolerant of extended periods of exposure to air, which determines its upper limit in the intertidal zone. The lower limit is determined by light penetration, which is largely dependent on water clarity. In turbid waters, eelgrass beds are rarely found below a depth of 3 to 4 meters.

Sunlight is converted into organic matter primarily by the eelgrass with a lesser contribution by epiphytic diatoms and algae. Many herbivorous species graze directly on the eelgrass or feed on the epiphytes. The root systems of eelgrass trap sediment, including organic detritus. This material along with dead and decaying eelgrass leaves, supports scavengers and detrital feeders. Some filter feeders exist within the substrate, while others occur as epiphytes on the eelgrass leaves. These organisms feed on plankton and suspended detritus carried into the eelgrass habitat by tidal currents. The various predators feed on the grazers, scavengers, and filter feeders. Eelgrass beds are generally located in the subtidal zone. Constant submergence of the beds favors visitation

of this habitat by fish. In addition to seeking food and protection within the eelgrass beds, many fish attach their eggs to the leaves of eelgrass. Eelgrass beds also serve as nursery areas for several species of important fish and as a potential food source for the green sea turtles. Eelgrass beds are highly productive. Surplus energy in the form of dead plant leaves is exported to other habitats, including the salt marsh, mudflats, and rocky bottom. The eelgrass beds are efficient in trapping sediment and detritus carried in from other habitats.

Salt Marsh. Intertidal emergent vegetation (i.e., salt marsh) is inhabited by specifically adapted aquatic vegetation and fauna. Sparse to dense stands of grasses, sedges, rushes, and succulent vegetation, varying in height from nearly prostrate to two meters, are the visually dominant life forms.

Vascular halophytes dominate the salt marsh habitat both with respect to standing crop (biomass) and to percentage cover. Two of the most important species in California are California cordgrass Spartina foliosa and pickleweed Salicornia bigelovii. The former grows along creek banks and elevations from mean high water (MHW) to mean high low water (MHLW). Salicornia extends from below MHW, nearly to MHHW (Hinde, 1954).

Several other species typical of Southern California include seablite (Suaeda californica), shoregrass (Monanthochloe littoralis), and saltgrass (Distichlis spicater).

Above the Zosteretum, in Upper Newport Bay, Stevenson and Emery (1958) identified five additional zones: Spartinetum, Salicornietum, Suaedetum, Monanthocloetum, and Distichlidetum. Each zone was named after the dominant species that occurred in it. However, in Anaheim Bay, Baker (1975) could identify only three additional zones: Spartinetum, Batietum/Salicornietum, and Distichlidetum.

It is noted that in San Elijo Lagoon (Anonymous, 1972b) and other periodically closed small lagoons in San Diego County, the typical salt marsh grasses, e.g., cordgrass, pickleweed, arrowgrass, Triglochin maritima, saltwort, Batis maritima, and eelgrass, of the permanently submerged zones in Southern California are absent. This absence is apparently associated with the absence of continuous tidal flushing in these lagoons.

There are four main food chains. One consists of the primary consumers grazing on vascular marsh plants, such as cordgrass, and pickleweed. The herbivores feed directly on the leaves, shoots, and seeds of the plants and include rabbits, meadow mice, and several species of ducks. This chain would be well developed in Anaheim Bay and Mugu Lagoon, for example, but less well developed in more established areas, as the Ballona Creek area in Los Angeles County.

A second grazing food chain is supported by the benthic algae and includes more aquatic than terrestrial organisms. Nematodes, foraminifera, ostracodes, amphipods, annelids, bivalves, and gastropods feed on diatoms and other microscopic algae. Several gastropods, snails, and several fish, including topsmelt and longjaw mudsucker, feed on the larger benthic algae.

A third grazing food chain, supported by phytoplankton during periods of tidal submergence, includes herbivorous zooplankton.

The last major source of energy is the detrital food chain, which has been found to possess a greater community energy flow than the grazing food chains (Teal, 1962). Decaying plant material provides the medium and substrate for bacteria and microbiota action. These micro-organisms are food for higher organisms. They also break down complex organic compounds to simpler forms, more usable by other organisms.

Detritus feeders in the marsh are many. Nematodes, ostracodes, many species of insects, and marine macroinvertebrates, such as the polychaete worms. Molluscs and crustaceans such as shore crabs Hemigrapsus, fiddler crabs Uca crenulata, and amphipods rely on detritus as their major source of nourishment.

The dominant plants of a salt marsh support a diverse, largely terrestrial herbivore community, including herbivorous insects, birds, and small mammals which feed directly on the leaves, shoots, or seeds. However, a substantial portion of the biomass produced is not consumed directly. Oxidation of decaying plant parts occurs by micro-organisms which form a detrital food chain.

The salt marsh is the most important food producing area within the estuary, particularly the smaller ones without large eelgrass beds. Being highly productive, the marsh exports large quantities of detritus to adjacent ecosystems. The detritus may be transported to adjacent mudflats or other estuarine habitats for consumption by deposit feeders or may remain in suspension where it is available for use by filter feeders and open-water zooplankton.

Some of the detritus reaches the nearshore oceanic areas where it plays a role in the food web there. This contribution is secondary to upwelling in California, however.

Rocky Bottom. Rocky bottoms, present primarily along headlands in some estuaries, and at the entrances to bays, are similar in species composition to shallow subtidal and intertidal areas of the oceanic coastal environment. Jetties and other artificial structures in estuaries near large human populations have a similar species composition and add to the areal representation of this habitat with the resulting increase of hard bottom species.

Many organisms move in and out of the rocky bottom habitat. Wading and shore birds, and fish may utilize this habitat during certain tidal stages; birds preferring low tides and fish high tides. These and other predators may be particularly evident in the rocky habitat during calm periods.

The rocky habitat exports detritus in the form of plant and algal particles to other habitats. Plant detritus enters the rocky habitat from other environments. The influx of phytoplankton and zooplankton from the open water habitat is extremely important as food supply.

Rocky intertidal habitats are discussed further in Section III.B.2.a.

Entrance Widths. An estimation of entrance widths of important estuaries is shown in Table III.B.6.a-1. The "normal" entrance width was obtained from California Fish and Game personnel (personal communication) or the openings as mapped on U.S. Geological Survey 7½' quad maps. Maximum openings, obtained from the same source, were estimated based on two assumptions: 1) The entire fronting spit bar may be breached (or washed away) during winter and spring flood conditions coupled with high tide and storms; and 2) The entire valley at the mouth may be flooded and open when the entrance lies within a definite valley closely bordered by topographic highs. The former assumption is valid and is typical while the latter rarely occurs, perhaps only occurring during extremely rainy years within several of the estuaries. Therefore, these represent extremely conservative estimates of the maximum flooding possible. The minimum openings and the dimensions of major habitats were obtained from California Fish and Game (1973), Fish and Game Wetland series, Fish and Game personnel, particularly Earl Lauppe (personal communication, 1981).

b. Marine Reserves, Refuges and Areas of Special Biological Significance: Five main types of areas are described in this section. They are not all unique, literally, but all are of biological importance. The five types are: 1) Ecological Reserves, 2) Marine Life Refuges, 3) Area(s) of Special Biological Significance (ASBS), 4) unique biological areas, and 5) biologically sensitive areas (not already covered in the other categories). The first three are legally defined and controlled by the State of California. It should be noted that the terms Reserve and Marine Reserve are used in addition to Ecological Reserve. The three categories are very similar; however, there are more restrictions and controls in an Ecological Reserve. The purpose of the refuges and reserves is to reduce the abuse and waste of the State's tide pool resources by restricting general collecting of all animals living in tide pools and other areas between the high tide mark and 1,000 feet below the low tide mark. From Point Conception to the U.S.-Mexican Border, there are seven Ecological Reserves, nine Marine Life refuges and fifteen Area(s) of Special Biological Significance. There are seven Ecological Reserves, three Marine Life Refuges, and fifteen Areas of Special Biological Significance (ASBS) between Point Reyes and Point Conception (Table III.B.6.b-1). Some of the Ecological Reserves and Marine Life Refuges have also been designated ASBSs. Ecological Reserves, Marine Life Refuges, ASBSs, unique and sensitive biological areas are defined and further discussed in U.S. Department of the Interior (1978a,b). The Santa Monica Mountains National Recreation Area, controlled by the U.S. Park Service, which includes or will include all the parks between Mugu Lagoon and Santa Monica Pier should be included in this list. The seaward limits of the recreational area is to mean high tide.

7. Marine Sanctuaries: There are two designated National Marine Sanctuaries offshore California, the Farallon Islands and the Channel Islands. A third area, Monterey Bay, is under study. Implementing regulations for the Channel Islands became effective on March 30, 1981. However, regulations pertaining to hydrocarbon activities were suspended and an analysis of the sanctuary regulations, relative to oil and gas development, is being conducted. Depending upon the results, drilling may or may not be allowed within the boundaries. The Channel Islands Sanctuary is the only one within (or near) the Proposed Sale No. 68 area. It consists of the ocean area, from the high

TABLE III.B.6.a-1

WIDTH OF ENTRANCE OF THE IMPORTANT
ESTUARIES IN THE SOUTHERN CALIFORNIA BIGHT

(All numbers are metric meters: S-small opening 1 to 10 meters)

<u>Estuary</u>	Width of Entrance	
	<u>Normal</u>	<u>Max.-Min.</u>
Devereaux Slough	0	S - 0
Goleta Slough	S	400 - 0
Carpinteria Marsh	S	30 - 0
Mugu Lagoon	30	800 - 30
Ventura River	0	S - 0
Santa Clara River	0	S - 0
Malibu River	S	S - 0
Ballona Creek	30	30 - 30
Anaheim Bay	200	200 - 200
Cerritos Marsh	S	S - S
Santa Ana River	S	S - 0
Newport Bay	225	225 - 225
San Mateo Creek	30	150 - 0
Santa Margarita River	S	200 - S
San Luis Rey River	S	S - 0
Buena Vista Lagoon	S	200 - S
Agua Hedionda	90	900 - 90
Batiquitos Lagoon	S	450 - 0
San Elijo Lagoon	0	1200 - S
Los Penasquitos Lagoon	S	520 - 0
Mission Bay	250	250 - 250
San Diego Bay	690	690 - 690
Tijuana River	S	80 - S

tide line seaward to a distance of 6 nmi, around San Miguel, Santa Rosa, Santa Cruz, Anacapa and Santa Barbara Islands. For further information see the following: FEIS for OCS Sale No. 48 (U.S. Department of the Interior, 1978), FEIS on the Proposed Channel Islands Marine Sanctuary (U.S. Department of Commerce, May 1980), The General Management Plan Channel Islands National Park (National Park Service, September 1980) and Section II.B.2 of this document.

TABLE III.B.6.b-1

AREAS OF DEFINED BIOLOGICAL SIGNIFICANCE IN THE SOUTHERN CALIFORNIA BIGHT. ASBS - AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE.
S - BIOLOGICAL SENSITIVE OR UNIQUE AREAS NOT ALREADY COVERED BY OTHER CATEGORIES

Abalone Cove Ecological Reserve	
Bolsa Chica Ecological Reserve	
Heisler Park Ecological Reserve	ASBS
Farnsworth Bank Ecological Reserve	
Buena Vista Lagoon Ecological Reserve	
San Diego - La Jolla Ecological Reserve	ASBS
Point Loma Reserve	
Point Fermin Marine Refuge	
Newport Beach Marine Life Refuge	ASBS
Irvine Coast Marine Life Refuge	ASBS
Laguna Beach Marine Life Refuge	
South Laguna Beach Marine Life Refuge	
Niguel Marine Life Refuge	
Dana Point Marine Life Refuge	
Doheny Beach Marine Life Refuge	
San Diego Marine Life Refuge	ASBS
San Miguel Island	ASBS
Santa Rosa Island	ASBS
Santa Cruz Island	ASBS
San Nicolas Island	ASBS
Begg Rock	ASBS
Santa Barbara Island	ASBS
Anacapa Island	ASBS
San Clemente Island	ASBS
Santa Catalina Island including the following subareas:	
Subarea 1 Isthmus	
Subarea 2 North end of Little Harbor to Ben Weston Point	
Subarea 3 Farnsworth Bank	
Subarea 4 Binnacle Rock to Jewfish Point	
Mugu Lagoon to Latigo Point	ASBS
San Nicolas Island - northwest end	S
Tanner and Cortes Banks	S
Santa Rosa - Cortes Ridge -	
100 m. to 500 m. depth	S
Castle Rock - San Clemente Island	S
Santa Rosa Island - north shore	S
San Clemente Island - outer coast	S

8. Terrestrial Resources: The principal mainland vegetative communities are shown in Figure III.B.8-1.

The species on the Channel Islands are apparently similar to those of the mainland, although Laughrin (1973) reports several endemic species (species located only on these islands). On the steep walls and cliffs of island canyons, but out of reach of the persistent goats, precariously remain some of the unique and interesting island endemics such as the tree dandelion Manzothamun blairii, island snapdragon Galvezia, island buckwheat Eriogonun giganteun, and monkey flower Mimulus flemingii.

More detail and pertinent references are given in the OCS Sale No. 48 EIS and POCS Reference Paper No. 1 (USDI, 1978 a,b).

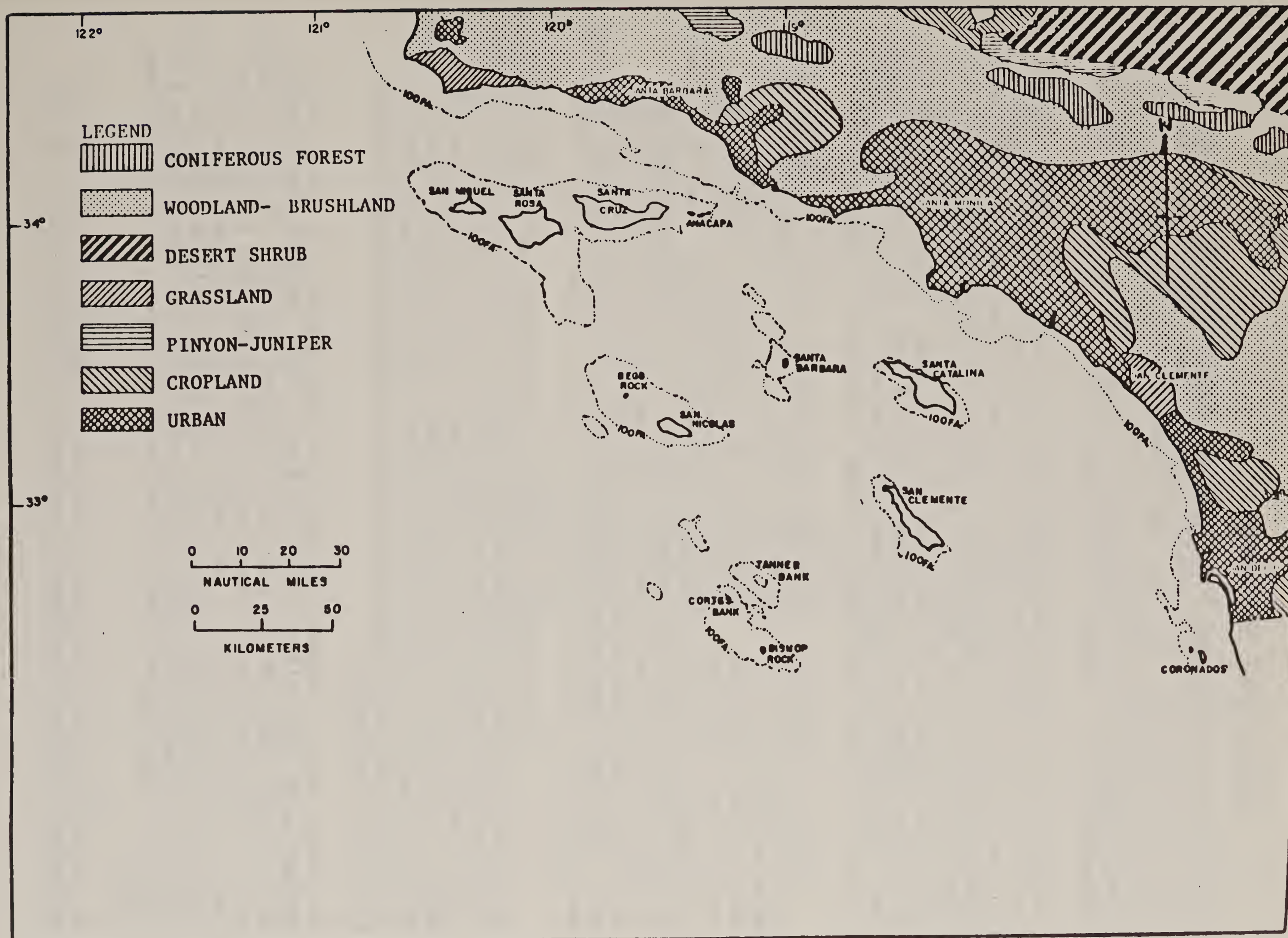


Figure III.B.8-1 Vegetation of Southern California Coast

Source: Bureau of Land Management, California State Office (1973).

C. Socio-Economic Environment

The study area for Proposed Sale No. 68 encompasses the five Southern California coastal counties including Santa Barbara, Ventura, Los Angeles, Orange, and San Diego. Although some effects of Proposed Sale No. 68 activity may occur in virtually every part of the country due to the interconnections between industries, the direct effects are expected to be felt in these five Southern California counties chosen for the study area.

Economic activity and population densities in the study area range from the heavily industrialized urban centers in the Los Angeles-Orange County area to the more sparsely populated, predominantly agricultural region in the Santa Barbara-Ventura area. Three counties adjacent to the proposed sale area, Los Angeles, Orange, and San Diego, are also the most populated counties in the State. The population, business, and industry which is concentrated in the greater Los Angeles area is exceeded in the U.S. only by the greater New York area. The greater Los Angeles area also possesses a large, diverse economic base which includes established petroleum production and service facilities.

1. Demography: Estimates and characteristics of the population for Southern California counties and coastal cities for January, 1980, are shown in Table III.C.1-1. These five counties represent 51 percent of the State's total population. The majority of the population resides in the coastal areas. Although the region is still considered a growth area, the rate does not match that prevailing in the 1950s and 1960s. Ventura and Santa Barbara Counties, which have recently begun to feel urban pressures, are attempting to manage their growth through programs which would encourage infilling within urban areas so as to preserve the important agricultural uses. Additional descriptive information about the study area may be found in the OCS Sale No. 48 Final Environmental Statement, Volume I (USDI, 1979).

2. Coastal Economy: California is presently the nation's leading agricultural producer receiving nearly 10 percent of all cash receipts nationally from only 3 percent of the nation's farms. In the Southern California region, tourist-related business contributes to retail and wholesale trade which is a key sector in California's economy. The aerospace industry is also strong economically with the aircraft sector being traditionally dominant. California's important industries, agriculture, manufacturing, and trade, are also regionally dominant.

The coastal zone of Southern California has been divided into three coastal regions in the 1975 California Coastal Plan. These regions possess similar socio-economic characteristics as well as natural features. The three regions are: 1) the south central coast region which extends from San Luis Obispo County to Ventura County; 2) the south coast region which encompasses Los Angeles and Orange County coastal areas; and 3) the San Diego coastline. This discussion emphasizes the south central and south coast regions because the majority of the proposed offshore development would occur north of San Diego County.

In the south central coast region counties, a significant percent of total employment (California Employment Development Department data) is in the

TABLE III.C.1-1
SELECTED DEMOGRAPHIC STATISTICS

County & Major Coastal Cities	Estimated Population 1-1-80 ^a	Population Density per Square Mile
<u>Santa Barbara</u>	295,100	108
Carpinteria	10,100	
Lompoc	26,250	
Santa Barbara, City	73,500	
Santa Maria	37,050	
<u>Ventura</u>	510,300	276
Camarillo	33,450	
Oxnard	98,300	
Port Hueneme	18,500	
San Buenaventura	70,100	
<u>Los Angeles</u>	7,163,100	1,764
Long Beach	345,300	
Los Angeles	2,817,800	
Santa Monica	88,600	
Torrance	126,700	
<u>Orange</u>	1,896,200	2,425
Huntington Beach	172,200	
Newport Beach	65,300	
<u>San Diego</u>	1,808,200	425
San Diego, City	842,100	
Regional Total	11,672,900	853
State Total	22,911,000	146

Source: ^aState of California, Population Research Unit, May, 1980.

agricultural, fishing, and forestry sector with agriculture being the largest component. Leading crops are citrus fruits, avocados, and truck crops. Approximately 5 percent of the value of farm products sold in the State comes from these two counties. There is significant developmental pressure on farmlands, particularly in the Oxnard Plain of Ventura County.

In recent years, manufacturing is a rapidly growing source of income in the south central coast region. The aerospace industry is most important in terms of employment in Ventura County, while in Santa Barbara County, growth in employment in electric and electronic equipment manufacture has been significant.

The economy of the south coast region is well diversified. Orange County is heavily concentrated, relative to the rest of the State, in construction and durable goods manufacturing. In Los Angeles County, employment is well diversified with a large portion in the service, aerospace, retail, and government sectors. Los Angeles County ranks first in California in many manufacturing categories including employment, wages, value added (48 percent of the State total in 1972), and new capital expenditures.

The Southern California area also rates high in terms of petroleum production with Los Angeles, Orange, Ventura, and Santa Barbara Counties ranking second, third, fourth, and fifth, respectively, among all of California's counties in 1979. Petroleum production occurring from State tidelands leases accounts for much of Santa Barbara County's petroleum output. Additionally, petroleum production from the OCS adds to this petroleum output.

The relative importance of the manufacturing and agricultural sectors is indicated by the data presented in Table III.C.2-1. Important variables displayed are median income, value added by manufacture, new capital expenditures, and agricultural sales.

Table III.C.2-2 shows the components of employment for the counties in the study area. The proportion of employment in retail trade and services is comparable to State and national averages in all counties except in Santa Barbara which is lower for retail trade. Tourism-related employment occurs mainly in the services sector and is difficult to identify as a separate item. The employment data also indicate that agriculture is a significant component in Santa Barbara and Ventura Counties. The most recent unemployment figures are shown in Table III.C.2-2.

3. Public Facilities and Services: Existing service levels for major categories of services were surveyed in order to determine the capacity of each in terms of the population that each can serve. Present service levels which have implications for patterns of future growth or can be impacted by oil spills are emphasized here. As a result of this inventory and evaluation, the following basic categories were identified for further discussion: 1) water supply, 2) waste treatment and disposal, 3) public school systems, and 4) electricity supply.

Both Santa Barbara and Ventura Counties are experiencing or expect localized stress on the capacity of water supply and waste treatment facilities even without OCS-related population gains.

TABLE 111.C.2-1

SELECTED ECONOMIC INDICATORS FOR COUNTIES IN THE
PROPOSED SALE NO. 68 AREA

County	Value Added by Manufacture (1972) Millions of Dollars	New Capital Expenditure (1972) Millions of Dollars	Value of Agricultural Sales ^b (1974) Millions of Dollars	Average Annual Change in Per Capita Income (1969-1974)	Median Income, 1977 Tax Year ^b
Santa Barbara		169.7	10.2	150.0	7.0%
Ventura	288.5	21.4	251.7	7.1%	12,660
Los Angeles	15,234.9	692.3	144.4	6.2%	10,747
Orange	2,734.4	144.3	1.7	7.1%	12,657
San Diego	1,185.2	53.4	204.3	7.2%	10,515
The State	31,175.2	1,645.9	7,360.5	6.9%	11,717

Source: ^aCalifornia Franchise Tax Board, Research and Statistics^bU.S. Bureau of the Census, 1977, County and City Data Book.

TABLE 111.C.2-2

CHARACTERISTICS OF EMPLOYMENT IN THE PROPOSED SALE NO. 68 AREA

County	Avg. Monthly Employment All Industries-1978	-----Percent Employment-1978-----					Unemployment Rate 9-80
		Agri., Forestry, & Fishing	Manufac- turing	Retail Trade	Services	Other	
Santa Barbara	118,244	6	13	3	25	53	5.5%
Ventura	142,849	11	15	19	16	39	7.4%
Los Angeles	3,308,760	1	27	16	22	34	7.5%
Orange	737,303	2	27	20	19	32	4.3%
San Diego	562,229	3	16	21	22	38	6.4%
The State	9,041,771	4	21	18	20	37	6.9%

Source: Based on data provided by the California Employment Development Department.

In Ventura County, public service capacities for sewer systems are severely limited in the north coast area (from Santa Barbara County to the Ventura River Basin) and the south coast area (from the southern city limit to Oxnard to Los Angeles County). The water supply capacity is severely limited in the south coast area as well (Ventura County General Plan, 1980). Currently, the County relies on imported water to make up for the deficits. For a general discussion of freshwater aquifers, see U.S. Department of the Interior (1975b) and Poland (1959).

In 1979, Santa Barbara County voters rejected importation of State water as a means of augmenting the County's limited water resources. Currently, water deficits are being experienced in the Carpinteria, Montecito, and Goleta water districts (Santa Barbara County Coastal Plan). Section III.C.4 provides more detail. Section III.D.3 discusses projected capacities for these types of community services.

Due to declining school age population, public school facilities are not experiencing the pressures that were experienced only a few years ago. However, increases in the number of school-age children are expected to occur, especially in Ventura County. Temporary classroom crowding could occur.

Public revenues used to finance the acquisition and operation of public facilities such as schools present a complex analytical situation because of the differing fiscal situation of county governments, school districts, and municipalities. When examining revenues and expenditures, it is important to note that certain legal limitations have been placed on the taxing power of political jurisdictions. Local capital expenditures which may occur as a result of OCS-related population growth are impossible to forecast. Table III.C.3-1 presents a summary of county fiscal data for 1977-78.

Three major electrical companies and other smaller companies supply electrical power to the region. The three major companies are Southern California Edison, Los Angeles Department of Water and Power, and San Diego Gas and Electric. Small companies include four local city power plants in Los Angeles County. Each major electrical company not only owns power plants but also imports power from as far away as the Pacific Northwest utility companies. Power plants with submerged ocean cooling water systems and within the study area are listed in Section IV.C.13.

A description of expected future socio-economic conditions may be found in Section III.D.

TABLE III.C.3-1

FINANCIAL TRANSACTIONS CONCERNING COUNTIES
Thousands of Dollars
(1977-1978)

County	Receipts All Sources	Payments	Estimated (1976-77 Current) Property Tax Revenues
Santa Barbara	104,682	105,959	28,823
Ventura	182,579	158,569	49,146
Los Angeles	3,328,110	3,213,876	1,096,377
Orange	399,699	393,854	116,432
San Diego	490,561	489,427	131,863

Source: State of California, Office of the State Controller, Division of Local Government Fiscal Affairs.

4. Coastal Land Use: The earliest non-native settlements in the Southern California Bight were located along waterways and on the coast near natural harbors and anchorages. The rugged terrain of the Transverse and Peninsular mountain ranges tended to concentrate population growth in valleys and along the coast. The five Southern California coastal counties are generally regarded as heavily urbanized especially immediately adjacent to the coast. Urban growth throughout the coastal counties has been rapid during the last 20 years. Current high interest rates have slowed the growth rate appreciably. Additional factors affecting the rate of urbanization in the coastal zone are the passage in California of Proposition 20 in 1972 and the enacting by Congress of the Coastal Zone Management Act also in 1972. Coastal zone as used in this section refers to the definition as given in the California Coastal Plan (1975) unless used in specific reference to the Coastal Zone Management Act of 1972, then it refers to the more restrictive definition used in that Act.

Generally, the broad, relatively flat valleys and plains are heavily developed with the mountainous areas developed to a lesser degree. Most development in the mountains is concentrated along transportation corridors. Growth in the Southern California area is moving eastward into the Mojave and Colorado Deserts, making water an increasingly important factor in terms of continued growth.

Agricultural use, including ranching, is diminishing under constant growth demands for expanded urban areas. Large farms and ranches are being broken up into smaller, less economical units to provide country living together with certain urban amenities. Agriculture is still a viable land use in many areas of Southern California (see Table III.C.4-1). Truck farms, flower fields, and orchards are common. Agriculture uses and housing are extensively intermixed in parts of Ventura, Orange, and San Diego Counties. The water needs of agriculture are the largest single use of water in most of these counties.

The remaining areas of natural, or minimally modified, vegetation are generally limited to the rugged mountain ranges. While the ruggedness and limited access have been the main factor in preserving these areas, they are facing increasing onslaught from urban growth, especially on slopes adjacent to urbanized areas. Some of these natural areas have been protected by the establishment of State and county parks and by land withdrawals for National Forests and National Parks. Coastal areas can be protected under the Local Coastal Programs required by the California Coastal Act of 1976. For additional detail on coastal significant habitats, refer to Section III.B.6.

Traditional growth areas of the Southern California coastal counties are currently being held in check by high interest rates and an increasing awareness by municipal governments of limited resources, e.g. funds, water, public facilities. Housing within the coastal zone is in high demand and limited in numbers because of topography and policy decisions by local jurisdictions. This results in high prices and a scarcity of affordable units. Affordable housing is in limited supply throughout the coastal counties, presenting a hardship to low, medium, and fixed income potential home buyers. In most of

the highly urbanized areas of the coastal zone, few new single family homes are being built, most new construction is multi-unit, either apartments or condominiums, many with restrictions against families with young children. Some areas have limited housing availability of all types. The south coast Santa Barbara County is an example.

Other limitations to rapid and/or continued growth is the availability of water and waste water treatment facilities. The Metropolitan Water District (MWD), the largest supplier of water to Southern California, will lose half of its entitlement to Colorado River water to the Central Arizona Water Project in 1985. MWD provides water to Los Angeles, Orange, San Diego Counties and parts of Ventura County. Future water sources for these counties is uncertain. The Peripheral Canal, part of the State Water Project, is one solution but it faces a statewide vote for approval. Local water agencies have initiated conservation programs and local jurisdictions have passed ordinances requiring water efficient appliances. Santa Barbara County and most of Ventura County use ground water and local reservoir systems. Both counties are overdrafting their available ground water supply in parts of the counties. Other areas have limited supplies of water available to accommodate new growth. Future water choices for Ventura and Santa Barbara are similar to those available to the other three counties; conservation, the State Water Project, and increasing the capacity and capabilities of local systems. For an in depth discussion of the water needs of Santa Barbara and Ventura Counties refer to POCs Technical Paper No. 81-4 (Blayney-Dyett, 1981). Many waste water treatment facilities are operating at near capacity and some are scheduled for modification to increase capacity. Several facilities will reach capacity in the mid- 1980's, others in the early 1990's. Waste water disposal and treatment is definitely a problem for the Malibu area of Los Angeles County and for San Diego City. The current economic situation with fewer new housing starts may prolong the time before capacity is reached. This is important as funding for future expansion (1985-1990) may be hard to find in today's budget climate. Refer also to Section III.C.3 and POCs Technical Paper No. 81-4 (Blayney-Dyett, 1981).

Housing availability is partially a function of the policy decisions made by local jurisdictions. Options available to local governments include limited expansion into agriculture and vacant areas, zoning to encourage infilling, zoning changes to encourage redevelopment and the mixed use of commercial and residential properties, and the increasing of allowable densities. Refer also to Section III.C.1.

For a discussion of other land uses, please refer to the following sections: Military Uses, Section III.C.8; Transportation Systems, Section III.C.7; Recreation, Section III.C.5; Coastal Economics, Section III.C.2; Oil and Gas Infrastructure, Section III.C.6; and Manmade Structures, Section IV.A.2.

The passage, in 1972, of the Coastal Zone Management Act by Congress and Proposition 20 by the people of California indicated a local and nationwide concern for coastal areas and the impacts of continued development. Through the Local Coastal Programs (LCP), land use plans and zoning requirements are established for controlled development and utilization of the coastal zone. Refer to Section I.B.8.a for a more complete discussion of Coastal Zone Management.

A detailed description of this area of the California coast can be found in the Sale No. 48 Final EIS (USDI, 1979b), the associated POCS Reference Paper No. II, Vols. 2 and 3 (USDI, 1978a), and the Sale No. 48 Land Use, Vegetation and Cultural Resource Visual, Visual No. 2 (USDI, 1979b).

TABLE III.C.4-1
COASTAL ZONE LAND USE IN ACRES

	Santa Barbara	Ventura	Los Angeles	Orange	San Diego	Total	% of Total
Agriculture	6,811	2,432	700	834	8,091	18,868	5.7%
Urban	4,831	3,095	21,939	11,662	27,958	69,485	21.1%
Military	0	3,968	713	3,559	13,755	21,995	6.7%
Native Cover	57,558	24,845	70,853	23,372	35,072	211,700	64.4%
Recreational	175	206	3,105	450	2,856	6,792	2.1%
Total	69,375	34,546	97,310	39,877	87,732	328,840	

5. Recreation: Recreation is an important component of the Southern California environment and economy. An abundance of opportunity combined with a large, highly mobile population creates a situation unparalleled elsewhere in the world. The Southern California coast is a highly sensitive natural resource area and is an important recreational asset to the residents of the State and to tourists. It is an extremely diverse area in respect to the landscape in that it varies from rugged, wind-blown cliffs to flat sandy beaches. This diversity creates a unique area which changes character at every bend of the shoreline, attracting tourists from all parts of the world to view the scenery and enjoy the spectacular natural environment. Or, if they desire, they can be in a densely populated commercialized recreation area within a relatively short distance. Along the coast, recreation is primarily water-oriented, both from an active participation, and from an aesthetic and passive aspect. There are numerous public and privately owned recreational sites which have direct access to the ocean. The coastline from Mugu Lagoon to Santa Monica State Beach is part of the Santa Monica Mountains National Recreation Area. Ownership of the shorefront property is not by the National Park Service, although the Park Service does coordinate with the actual owners to maintain National Recreation Area standards. Table III.C.5-2 shows the general distribution of shoreline ownership. A detailed description of Southern California recreation can be found in POCS Reference Paper No. II (USDI, 1978a).

The coastal State Parks, shown on Figure III.C.5-1, help exemplify the density of the recreational areas in Southern California. Recreation areas have a total shoreline of over 277 km (172 miles) which is more than 50 percent of the 544 km (338 miles) ocean shoreline of the Southern California coast. Visitation of these beach areas has more than doubled over the least 10 years as shown in Figure III.C.5-2.

The major recreational activities of the area are sightseeing, beachcombing, picnicking, boating, swimming, wading, sunbathing, diving, surfing, and sport-fishing. Sightseeing and beachcombing are enjoyed along the entire coast and are mainly dependent on the esthetic aspect of the area (see Visual Resources, Section III.C.10). Picnicking is mainly family group oriented and tends to be concentrated at easily accessible recreational facilities.

Boating is not limited to any specific area along the coast, although concentrations can be found in areas with suitable harbors such as San Diego, Los Angeles, Ventura, and Santa Barbara. Boating registration and participation days can be found in Table III.C.5-1, and major marinas are shown on Figure III.C.5-3.

Swimming, wading, and sunbathing are primarily summer activities and occur mainly at sandy coast type beaches. Diving occurs along the entire coast and is growing more popular each year. This is evidenced by the fact that on an annual basis new and advanced certification of SCUBA divers has grown from approximately 116,000 in 1970 to over 280,000 in 1977. There are presently 8 underwater parks and 16 other subtidal areas proposed or under consideration by the State for inclusion in the California State Park system (see Figure III.C.5-4). These draw heavy use from the diving community, as do the Channel Islands which draw more than 15,000 divers each year.

TABLE III.C.5-1

BOAT REGISTRATION AND PARTICIPATION DAYS

			Through 1/30	1979
	1976	1979	1980	Participation Days
Santa Barbara	7,161	7,312	6,807	874,252
Ventura	11,608	12,629	12,188	1,509,974
Los Angeles	107,322	104,737	97,371	12,522,775
Orange	44,789	49,025	46,279	5,861,625
San Diego	31,449	34,535	32,919	4,129,143
Total	202,329	208,238	195,564	24,897,769

Participation Days Based on 28.4 Days Boat Use and 4.21 People/Boat.

Source: Department of Motor Vehicles Vessel Registration

TABLE III.C.5-2

COAST TYPE BY OWNERSHIP (IN KILOMETERS)

	Sandy Coast						Rocky Coast						
County	Federal	State	County	Municipal	Private	Total	Federal	State	County	Municipal	Private	Total	Total Shoreline
Santa Barbara	22.3	12.6	7.7	6.6	85.1	134.3	15.6	3.9	0.5	0	20.9	40.9	175.2
Ventura	7.7	18.8	14.0	3.7	17.1	61.3	0	2.9	0	0	3.5	6.4	67.7
Los Angeles	0	28.8	4.7	0	48.1	81.6	3.9	2.6	3.5	0	20.3	30.3	111.9
Orange	0.3	15.8	1.9	14.3	22.5	54.8	0	0	1.3	0.6	9.7	11.6	66.4
San Diego	37.4	26.9	0.3	1.0	38.6	104.2	7.9	0	0	0.5	9.8	18.2	122.4
Total	67.7	102.9	28.6	25.6	211.4	436.2	27.4	9.4	5.3	1.1	64.2	107.4	543.6

Channel Islands Not Included

Source: California Coastline Preservation and Recreation Plan, August 1971

1 KM = 0.621 Miles

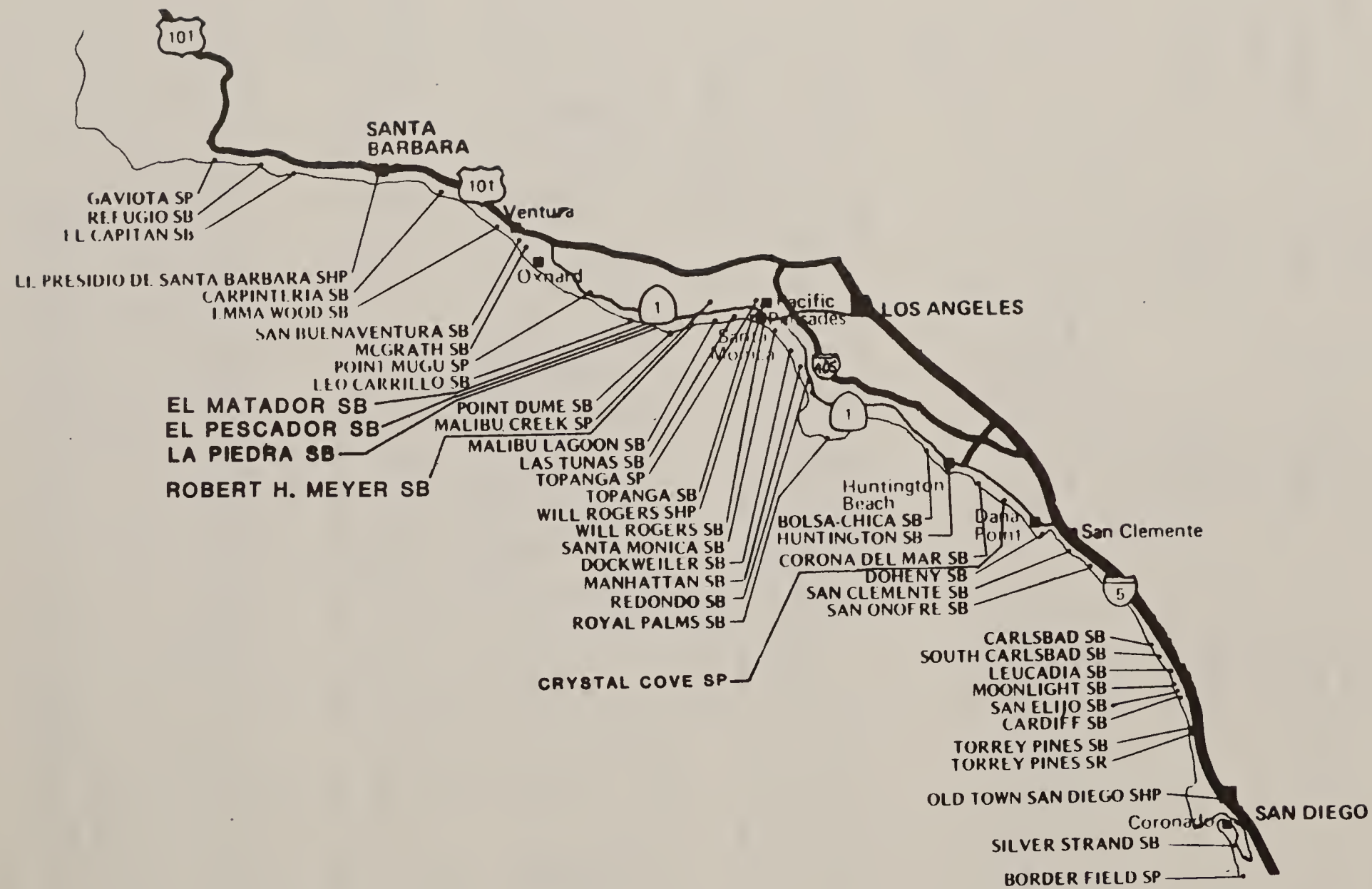


Figure III.C.5-1 Coastal State Park and Beaches in Southern California

Source: State of California Department of Parks and Recreation.

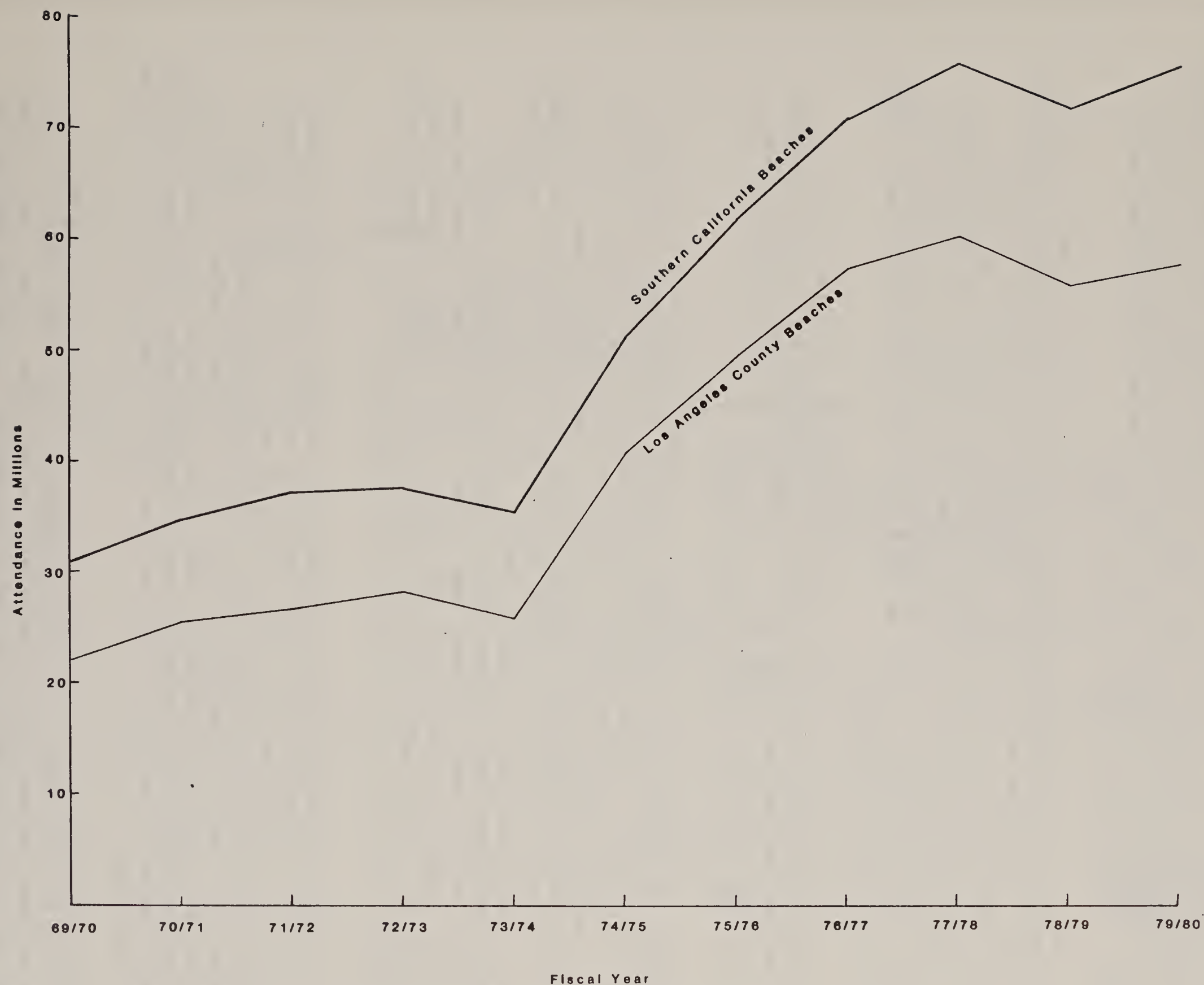


Figure III.C.5-2 Southern California Beach Use
Source: Calif. Dept. of Parks and Recreation
L.A. County Dept. of Beaches.

One of the major destinations for divers, tourists, and boaters are the offshore islands. Santa Catalina Island is the most visited, as it is the closest to the Los Angeles Metropolitan area and has regular ferry and air service from the Los Angeles area. Landing is relatively unrestricted with major anchorages at Avalon and Two Harbors. Permits are required for travel in the interior to help protect sensitive vegetation. Diving occurs primarily along the north shore at Bird Rock and Ship Rock area, and off the west shore at Farnsworth Bank. Boating occurs around the entire island.

The Channel Islands National Park was officially dedicated on March 5, 1980, and consists of San Miguel, Santa Rosa, Santa Cruz, Santa Barbara, and Anacapa Islands. Visitation will continue to be restricted to protect sensitive plants and wildlife, but boating and diving will continue to be popular activities in the surrounding waters. San Nicolas and San Clemente Islands are under the jurisdiction of the U.S. Navy, and landing is by permit only. Diving and boating occur in the surrounding waters of these two islands, but there is not the heavy use that is found around the other islands due to their distance from the mainland.

Surfing depends entirely on the climatic and oceanic conditions that are present at each of the suitable surfbreaks. There has been a large increase in surfing over the past years due to the use of wet suits to protect the surfers from the cold. This allows the sport to be practiced over the entire year rather than just during the warmer season.

Tourism. Tourism is one of the largest industries in Southern California and supports approximately a million jobs according to the Southern California Visitors Council. In 1978, visitors spent more than \$7.2 billion in Southern California which increased to \$9.3 billion in 1979. In addition to out-of-state tourists, Southern California attracts a considerable number of visitors from the rest of California. Tourism is important to all the coastal communities. Certain communities, however, tend to act as focal points. Among these are Santa Barbara, Ventura, Oxnard, Malibu, Santa Monica, Venice, Redondo Beach, Huntington Beach, Newport Beach, Laguna Beach, Carlsbad, Del Mar, LaJolla, Pacific Beach, Coronado, and Avalon. Many of these communities are heavily dependent economically on the tourist industry. Tourist expenditure contributes directly and indirectly to almost every sector of regional economic activity (see POCS Technical Paper No. 81-3 (Dowling, 1981) for economic details).

The attractions which Southern California has to offer the tourist are many and varied. Those who like outdoor recreation have the choice of mountains, desert, or excellent beaches, while others may be attracted to the cultural activities found in the larger cities. Just as important, however, are a number of commercial attractions, (Table III.C.5-3) most famous of which is Disneyland. Others include Knotts Berry Farm, Marineland, Lion Country Safari, and Magic Mountain, all located in the Los Angeles-Orange County area, and Sea World located in San Diego. There are also the outstanding zoos of Los Angeles and San Diego.

These attractions had an attendance of over 47.7 million in 1979 (Table III.C.5-3) which means an estimated expenditure of over \$220 million in 1979 by tourists for admission to the attractions and rides. This is only a minor part of tourist expenditure, but shows the magnitude of tourist spending in Southern California when considered with other tourist oriented services such as food, shelter and transportation.

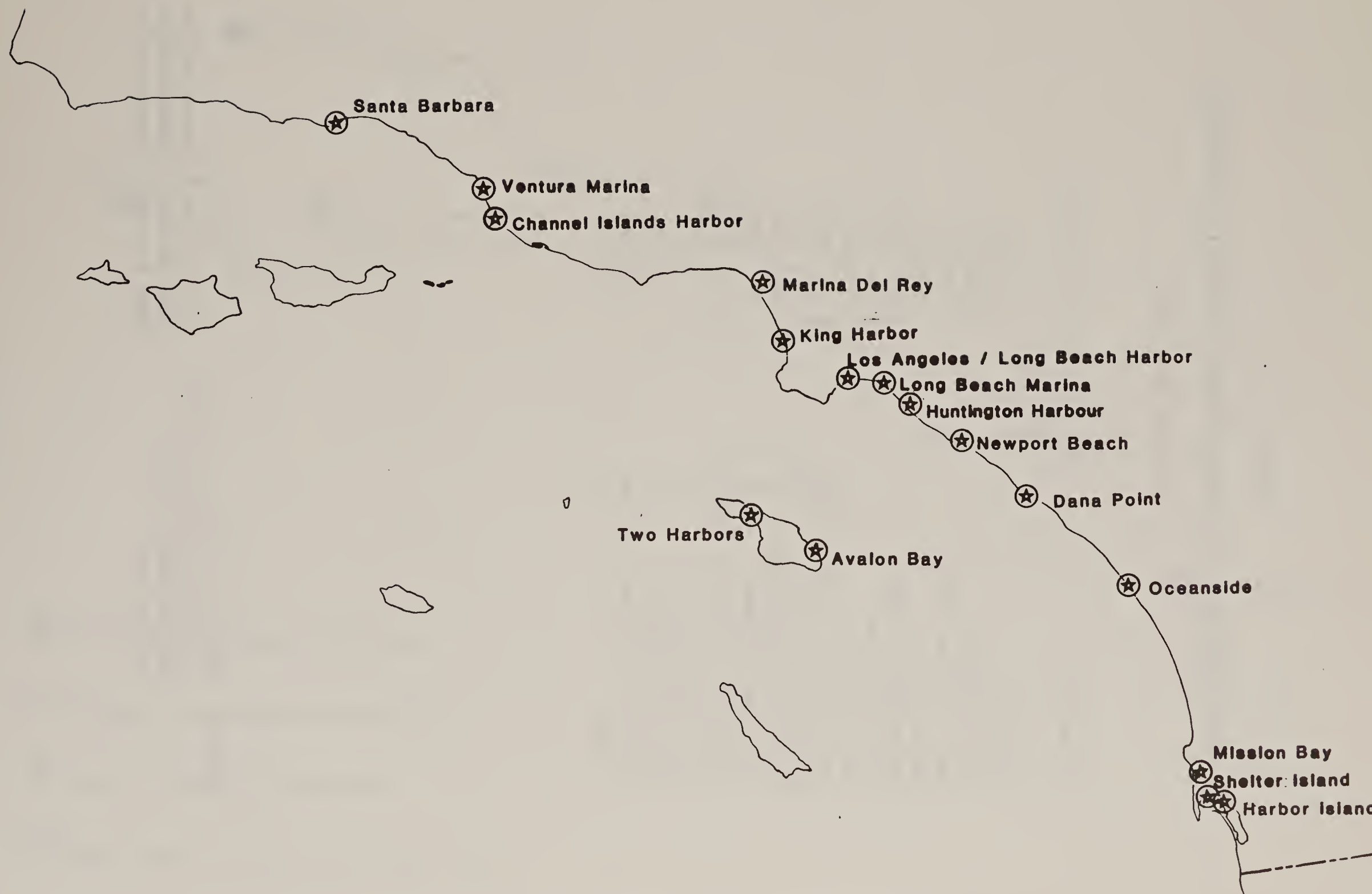


Figure III.C.5-3 Southern California Marinas
Source: Pacific Boating Almanac 1981.

TABLE III.C.5-3

MAJOR SOUTHERN CALIFORNIA TOURIST ATTRACTION ATTENDANCE

(To Nearest Thousand)

Attraction	1979 Attendance
Disneyland	10,700,000
Sea World	2,454,000
San Diego Zoo	3,038,000
Univ. Studios Tour	3,500,000
Queen Mary	516,000
Knotts Berry Farm	4,000,000
Magic Mountain	2,000,000
Marineland	1,030,000
San Diego Wild Animal Farm	1,034,000
Burbank Studio Tour	5,000
Movieland Wax Museum	1,000,000
Fleet Space Center	534,000
Museum of Science & Industry	1,500,000
Los Angeles Zoo	1,531,000
Lion Country Safari	48,000
NBC Studios Tour	210,000
California Alligator Farm	50,000
Avalon	1,100,000

Source: PSA June 1980

California Alligator Farm	1980 Personal Communication
Burbank Studio Tour	1980 Personal Communication
Marineland	1980 Personal Communication

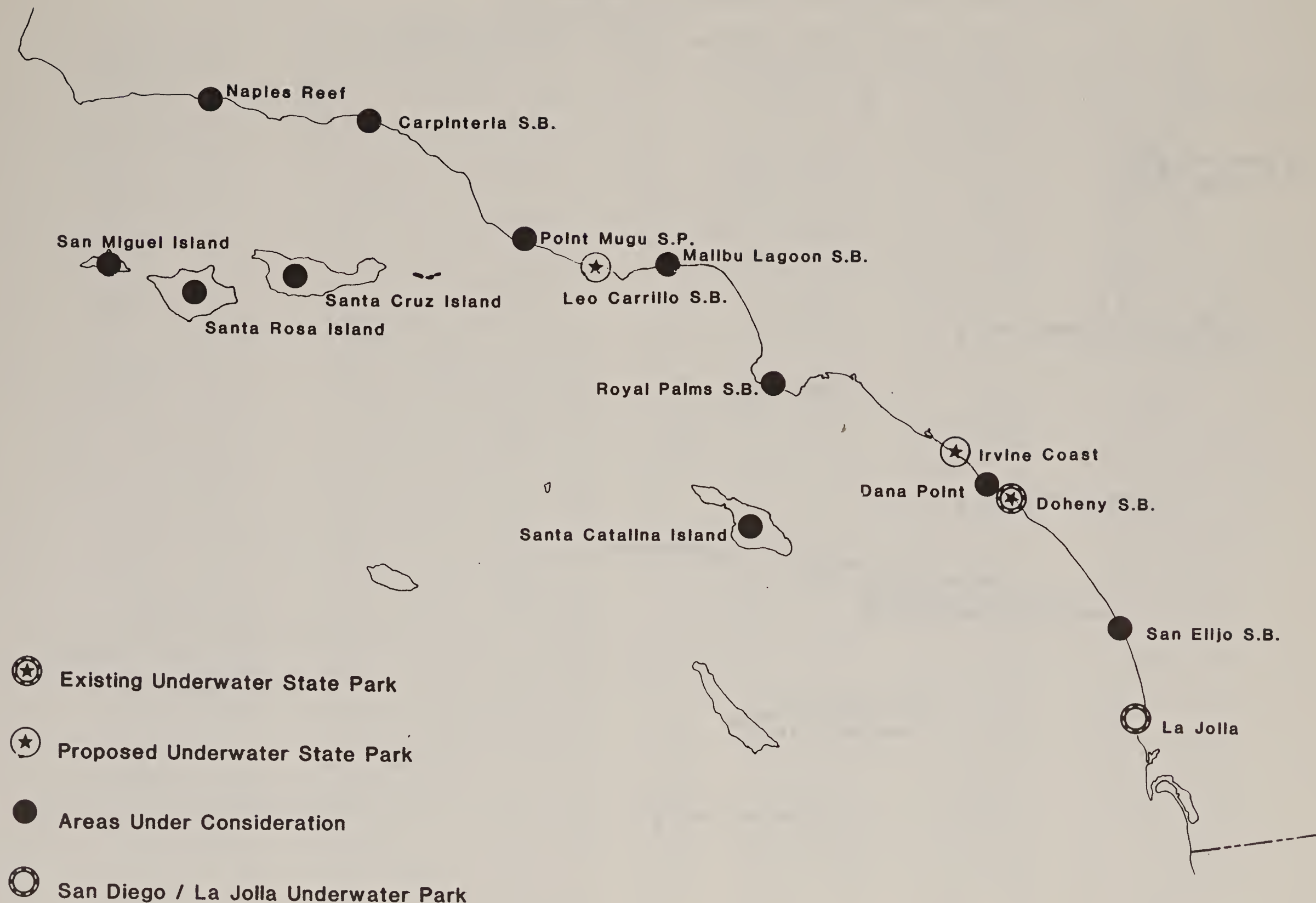


Figure III.C.5-4 Southern California Underwater Parks
Source: Calif. Dept. of Parks and Recreation.



Figure III.C.5-5 Major Tourist Attractions

Source: PSA June 1980

Los Angeles Times Sports and Recreation Map June 1977.

6. Oil and Gas Infrastructure

a. Refineries: The refinery capacity in California, as reported in the March 31, 1981, Oil and Gas Journal, is tabulated in Table III.C.6-1. This report indicates a total of 43 refineries in California with a total refining capacity of 2,634,075 barrels per calendar day (bcd). In the Los Angeles Basin, there are 19 refineries with a total capacity of 1,395,495 bcd which represents approximately 53 percent of the total California capacity.

According to the Department of Energy Report (Energy Data Report, Petroleum Statement, March 1980) for the month of March, the California refineries received 50,615,000 barrels of domestic crude oil and 10,612,000 barrels of foreign crude. Of the domestic crude, 26,203,000 barrels were intrastate and 24,412,000 barrels interstate. The foreign receipt in California represents about 8 percent of total foreign import to the United States.

Presently, (Lee, 1981) crude production on the Federal OCS is 62,723 bcd. Current production data for State waters off Southern California (Wilkinson, 1981) includes hydrocarbons produced from offshore platforms, artificial islands, and from drilling rigs located onshore, but directionally drilling offshore. Total daily production (1980) for these State areas is 109,232 bcd. Since the onshore data is included in the State figures, a direct comparison cannot be made between Federal and State production rates.

b. Offshore Structures: This section is divided into two parts: (i) structures located on the Federal OCS, and (ii) structures located in State waters.

i. Structures Located On The Federal OCS: The oil and gas structures located on the Federal OCS are listed in Table III.C.6-2 and are depicted in the Transportation Visual. (See Table VIII.F-2 for a history of oil and gas development off Southern California). Currently, there are 14 structures in the Southern California Federal OCS area: 13 platforms and one Offshore Separation and Treatment (OS&T) vessel. Ten platforms are currently producing. Two (Gina and Gilda) have only recently been installed; and one (Elly), is a production platform from which no wells will be drilled. The OS&T vessel is a converted tanker which functions as a floating separation, power generation, and storage facility for crude oil from Platform Hondo. There are no subsea completions or artificial islands in the described area. (See Appendix F, Table F-2 for a history of oil and gas development off Southern California.)

ii. Structures Located In State Waters: The oil and gas structures that are located in the State waters off Southern California are listed in Table III.C.6-3 and are depicted in the Transportation Visual. Currently there are 16 structures in State waters: nine platforms and seven artificial islands. All of the structures are currently producing. In addition to the 16 structures, there are approximately 39 subsea completion systems (gas) in the Santa Barbara Channel. No production structures similar to Elly and the Hondo OS&T exist in State waters.

TABLE III.C.6-1

REFINERIES IN CALIFORNIA

COMPANIES AND LOCATIONS	CRUDE CAPACITY (Barrels Per Calendar Day)
<u>SOUTHERN CALIFORNIA</u>	
Los Angeles Basin (19 Refineries)	
Atlantic Richfield Co. - Carson	212,000
Champlin Petroleum Co. - Wilmington	60,000
Chevron U.S.A., Inc. - El Segundo	405,000
Conoco Oil Co. - Paramount	46,500
DeMenno-Kerdoon - Compton	15,000
Eco Petroleum Inc. - Signal Hill	11,000
Edgington Oil Co. - Long Beach	41,600
Fletcher Oil & Refining Co. - Carson	29,500
Golden Eagle Refining Co. - Carson	16,500
Gulf Oil Co. - Santa Fe Springs	51,500
Huntway Refining Co. - Wilmington	5,425
Lunday-Thagard Oil Co. - South Gate	10,850
Macmillan Ring-Free Oil Co. - Signal Hill	13,000
Marlex Oil & Refining Inc. - Long Beach	19,000
Mobil Oil Corp. - Torrance	123,500
Powerine Oil Co. - Santa Fe Springs	44,120
Shell Oil Co. - Wilmington	108,000
Texaco Inc. - Wilmington	75,000
Union Oil Co. of California - Los Angeles	<u>108,000</u>
TOTAL : LOS ANGELES BASIN	1,395,495
Other Areas (4 Refineries)	
Douglas Oil Co. - Santa Maria	9,500
Newhall Refining Co. - Newhall	21,000
Oxnard Refinery - Oxnard	4,700
USA Petrochem Corp. - Ventura	<u>27,900</u>
TOTAL : OTHER AREAS	63,100
<u>SAN FRANCISCO BAY AREA and SAN JOAQUIN VALLEY</u> (20 Refineries)	
TOTAL	<u>1,175,480</u>
GRAND TOTAL : CALIFORNIA (43 Refineries)	2,634,075

Source : Oil and Gas Journal, March 31, 1981, Annual Refining Survey.

TABLE III.C.6-2

EXISTING OIL AND GAS STRUCTURES LOCATED ON THE
FEDERAL OCS OFF SOUTHERN CALIFORNIA

STRUCTURES	TYPE	
	Platforms	Production Facilities
HONDO	X	
OS&T VESSEL (HONDO)		X
GINA	X	
HILLHOUSE	X	
A	X	
B	X	
C	X	
HENRY	X	
HOGAN	X	
HOUCHIN	X	
GRACE*	X	
GILDA	X	
ELLEN	X	
ELLY		X

* Oil is processed on the platform.

TABLE III.C.6-3

EXISTING OIL AND GAS STRUCTURES LOCATED WITHIN
THE STATE WATERS OFF SOUTHERN CALIFORNIA

STRUCTURES	TYPE	
	Platforms	Artificial Islands
HERMAN	X	
HELEN	X	
HOLLY	X	
HILDA	X	
HAZEL	X	
HOPE	X	
HEIDI	X	
RINCON		X
GRISSOM		X
WHITE		X
FREEMAN		X
CHAFFEE		X
BELMONT (Monterey)		X
ESTHER		X
EVA	X	
EMMY	X	

c. Pipeline Systems

i. Onshore: Crude oil from local wells, Los Angeles and Long Beach ports, the Santa Barbara Channel Area, and the Bakersfield area is transported to Los Angeles Basin refineries by onshore pipeline.

Recently, Hallanger Engineers (1980) conducted a feasibility study of the installation of an onshore pipeline which would extend from Las Flores Canyon (located west of Santa Barbara) to Los Angeles. The study was conducted for Santa Barbara County, which is the coordinator of the Industry/Government Pipeline Working Group. This pipeline would transport crude oil produced in the Santa Barbara Channel to the Los Angeles Basin refineries. Hallanger concluded that the proposed pipeline is feasible.

Several other studies addressing the question of a pipeline from the Santa Barbara Channel area to the refineries in Southern California have been recently completed or are approaching completion at this writing. These include work by the California State Lands Commission, California Energy Commission, and Four Corners Pipeline Company. The State of California, through legislation, has encouraged planning and feasibility analyses by these agencies and groups like the Joint Industry/Government Pipeline Working Group. Additional legislation is pending.

Local and State policies will continue to apply to all onshore and nearshore oil and gas related facilities, including pipelines. State policies are described in the Coastal Management Plan. Local policies are provided in the Local Coastal Plan for each coastal jurisdiction.

Crude from Elk Hills (located west of Bakersfield) is transported by pipelines to refineries in the following areas: San Francisco Bay, Bakersfield, Los Angeles Basin, New Mexico, and the Gulf Coast. The Four Corners Pipeline, a common carrier, transports crude from Los Angeles to the Four Corners Area (this is the common border area between Colorado, Utah, New Mexico, and Arizona). Crude for Four Corners is from Elk Hills, Alaska, and local sources. Elk Hills represents most of the crude input to Four Corners (French, 1980).

The majority of the natural gas supply for the Southern California coastal counties is transported by pipelines from Texas by El Paso Natural Gas Company and Transwestern Pipeline Company. At the California-Arizona State Border, the pipeline ownership is transferred from the above two gas pipeline companies to the Southern California Gas Company (SCG) and Pacific Lighting Company (PLC). San Diego Gas and Electric Company obtains gas from SCG near Fallbrook and San Diego City and supplies most of the western section of San Diego County (Nelson, 1980).

Pacific Gas and Electric Company (PG&E) is also a major natural gas distribution company in California. PG&E has relied on three sources of supply for distribution in California markets: (1) gas from the Southwest delivered at the Arizona-California border by El Paso Natural Gas Company, (2) gas from Alberta, Canada, delivered by Pacific Gas Transmission Company (PGT), and (3) gas from producing fields within California. Natural gas produced as a result of the proposed lease sale could be transported by constructing a new onshore/offshore pipeline to an interconnection with PG&E's system or to the

other pipeline systems identified in the Southern California area. PG&E could also receive gas from the lease sale area through displacement or exchange agreements with gas companies in Southern California. Therefore, all areas of the State could eventually benefit from the natural gas produced from the proposed lease sale. See Chapter IV for description of impacts.

ii. Offshore: Oil and gas pipelines located on the Federal and State OCS are shown in the Transportation Visual. Pipelines are used to transport crude oil and gas that is produced from offshore platforms either to shore, or to an offshore treatment facility (i.e., the OS&T). Existing Federal OCS oil and gas pipelines are listed in Table III.C.6-4. Existing oil pipelines located in State waters off California are listed in Table III.C.6-5.

d. Onshore Facilities: Crude oil and natural gas from onshore and offshore production wells in the Southern California coastal areas are processed locally, when required, in crude oil and natural gas treatment and separation facilities. Crude oil facilities separate water from crude oil before transporting the processed crude to the refineries; gas treating facilities remove liquid hydrocarbon, carbon dioxide, and hydrogen sulfides from the produced natural gas. Processed gas is sold to a gas pipeline company. In this area, there are a total of 42 separation facilities of which 23 are crude oil, 10 are gas, and 9 are oil/gas.

TABLE III.C.6-4

EXISTING FEDERAL OCS OIL AND GAS PIPELINES
IN SOUTHERN CALIFORNIA

PLATFORMS	PIPELINE DESTINATION	DIAMETER (inches) AND TYPE	LENGTH (MILES)
HONDO	OS&T	12" OIL	1.5
GINA	MANDALAY BEACH	10" MIXED OIL/GAS	6.5
HILLHOUSE	A	8" OIL	0.5
		8" GAS	0.5
A	SUMMERLAND	12" OIL	12.0
		12" GAS	12.0
B	A	12" OIL	0.3
		12" GAS	0.3
C	B	12" OIL	0.3
		12" GAS	0.3
HENRY	HILLHOUSE	8" OIL	2.5
		6" GAS	2.5
HOGAN	LA CONCHITA	10" OIL	5.0
		12" GAS	5.0
HOUCHIN	HOGAN	10" OIL	0.5
		10" GAS	0.5
GRACE	HOPE	12" OIL	12.0
		10" GAS	12.0
GILDA	MANDALAY BEACH	12" OIL	10.0
		10" GAS	10.0
ELLEN	DIRECTLY CONNECTED TO ELLY		
ELLY	PIER J, LONG BEACH	16" OIL	16.0

TABLE III.C.6-5

EXISTING OIL PIPELINES LOCATED IN THE
STATE WATERS OFF SOUTHERN CALIFORNIA

ORIGINATING STRUCTURES	DIAMETER (Inches)	LENGTH (Miles)
HERMAN	6	2.3
HELEN	6	2.2
HOLLY	6	2.7
HILDA and HAZEL	6	5.0
HOPE and HEIDI	10	4.1
RINCON	6	0.6
GRISSOM	6	0.7
WHITE	8	4.0
FREEMAN	14	0.8
CHAFFEE	12	3.9
BELMONT (Monterey)	3	1.6
ESTHER	12	1.5
EVA	8	3.4
EMMY	14	1.3

Source : Resource Agency of California (1971).

7. Transportation Systems

a. Ports and Shipping: The final Port Access Route (PAR) recommendation from the Eleventh Coast Guard District was reviewed in conjunction with the Proposal by personnel at the Coast Guard Headquarters and the appropriate Coast Guard District. The PAR recommended by the Coast Guard (Caldwell, 1981) to BLM is:

(1) It is recommended that the western approaches to the Los Angeles/Long Beach Precautionary Area be reconfigured to relieve vessel routing conflicts in and near the Los Angeles Pilot Boarding Area. This would be accomplished by shifting the northbound lane 2 nautical miles south, shifting the southbound lane 1 mile south and reducing a portion of the separation zone from 2 miles to 1 mile. The Precautionary Area would also be reconfigured as depicted in the Transportation Visual. This recommended change would affect a portion of proposed tracts 34N-42W(159), 34N-40W(160) and 34N-39W(168). It would also have the affect of removing the majority of tract 35N-36W(167), part of 35N-37W(166) and all of 36N-36W(164) from the Precautionary Area.

(2) It is recommended that the southbound lane of the Gulf of Santa Catalina Traffic Separation Scheme (GSCTSS) be shifted 1.5 nautical miles to the west to allow an offshore platform to be installed in the existing southbound lane. This change is contingent upon the results of exploratory drilling activities now scheduled for September 1981. This proposed shift would affect a portion of proposed tracts 33N-38W(171), 32N-37W(173), 31N-38W(180), 31N-37W(181) and 30N-37W(186).

(3) It is recommended that the western end of the Santa Barbara Channel Traffic Separation Scheme (SBCTSS) be extended seaward and that a Precautionary Area be established approximately 20 miles west of Point Conception to act as junction for vessels entering and leaving the SBCTSS. This Precautionary Area would be a circle of 4 nautical mile radius centered at position 34 27'18"N, 121 02'30"W., just west of proposed tracts 55N-89W(1) and 54N-89W(5). An additional TSS would extend northward from this Precautionary Area to join with the port access route recommended by the Twelfth Coast Guard District seaward of the Santa Mara Basin of Lease Sale No. 53.

(4) It is recommended that the eastern end of the Santa Barbara Channel Traffic Separation Scheme, northeast of Anacapa Island, be shifted 0.5 nautical mile to the south to allow for a platform to be installed to develop the Sockeye Field. This minor shift would be an angular one pivoted on the center of the Precautionary Area discussed above. This proposed change would have minimal effect on Proposed Sale No. 68 tracts.

During the district's PAR study it was determined that management measures be implemented to govern oil and gas activities in the vicinity of designated Port Access Routes. As a result, exploratory drilling operations would not be permitted in traffic lanes, precautionary areas or safety fairways. However, exploratory drilling would be allowed within 500 meters of a traffic lane if no other obstructions, either permanent or temporary, were present on the opposite side of the lane for a transverse distance of the lane width plus 1000 meters and for a distance of 2 miles in each direction along the axis of

the lane. In addition, permanent structures would not be permitted in precautionary areas, safety fairways or in or within 500 meters of a traffic lane. Permanent structures would be allowed in the separation zones subject to case-by-case review.

Further mitigation measures were also recommended for exploratory operations, within 500 meters of a traffic lane. Those included a minimum 90-day advance notification for Notice to Mariner purposes and the use of radar and radio communications by the drilling unit. For an illustration of the proposed PAR, see Transportation Visual.

Total freight traffic for the main ports between Point Conception and the Mexican Border is tabulated in Table III.C.7.a-1 and illustrated in the Transportation Visual.

Fourteen conventional types of petroleum marine terminals (five to seven buoys) are located inside State waters along the coast of Southern California. These marine terminals have submarine pipelines from the terminals to onshore facilities to load and unload tankers with crude oil and unload tankers with fuel oil.

Reese-Chambers Systems Consultants (1980) conducted a commercial merchant vessel analysis through the Santa Barbara Channel via Point Conception to the Point Fermin Traffic Separation Scheme (TSS). They projected the number of vessels serving the Port of Los Angeles-Long Beach and Port Hueneme passing through the Santa Barbara Channel TSS on a daily basis in each direction as follows: 1980, from 12.4 to 15.7 ships per day; 1990, 13.9 to 19.3; and 2000, 14.7 to 21.7. They also indicated that the percentage of ships using the TSS compared to the alternate route through the Channel Islands had increased from 77 percent (TSS) in 1976 to 93 percent (TSS) in 1979.

b. Additional Transportation Systems: There are six public airports shown in the Transportation Visual. These airports are located near the proposed tract areas and have helicopter landing facilities. During exploration, development, and production of offshore oil and gas resources, helicopters could be used from these airports to transport passengers and equipments to the drilling vessels, pipe lay barges, and platforms. The airports are: Oxnard, Santa Barbara Municipal, Los Angeles International, Long Beach Municipal, John Wayne (Orange County) and Lindberg Field.

The main coastal highways between Point Conception and the Mexican Border are Interstate 5, U.S. 1, and State 1. Interstate 5 starts at the Mexican Border and follows the coastline to Dana Point and turns inland through Santa Ana and Newhall. State 1 follows the coastline from Dana Point to east of Point Conception. U.S. 1 is the main highway connecting downtown Los Angeles with the coastal cities along the Santa Barbara Channel. Interstates 8 and 10 are the main highways traveling eastward from San Diego and Los Angeles, respectively. Today, although the freeway system is not yet completed, Los Angeles is served by over 20 freeways. Eight freeways diverge from the downtown freeway loop. Other freeways provide outlying by-pass, feeder, and suburb-to-suburb connection.

Three major railroad companies own and maintain six main railroad lines. Southern Pacific operates the three major railroads which run from Los Angeles (LA) through Santa Barbara, LA through Bakersfield, and LA through El Paso.

Santa Fe operates the railroads from LA to San Diego and LA through San Bernardino. Union Pacific operates the railroads from LA through Las Vegas. These three companies operate all railroad freights, limited mail, and express services.

TABLE III.C.7.a-1

TOTAL FREIGHT TRAFFIC:
POINT CONCEPTION TO CALIFORNIA-OREGON BORDER
CALENDAR FOR YEAR 1978

HARBORS	TOTAL WATERBORNE ^a TONNAGE (Short TON = 2,000 Pounds)	VESSEL ^b ARRIVALS
Long Beach	31,586,404	14,227 (11,879) ^c
Los Angeles	32,827,478	16,196 (14,185) ^d
San Diego	2,571,402	1,831 (1,592) ^c
Port Hueneme	958,668	582 (517) ^c
TOTAL	67,943,952	32,836 (28,173) ^d

Source : Department of the Army, Corps of Engineers 1978. Waterborne Commerce of the United States, Part 4.

^aIncludes military shipping.

^bExcludes domestic fishing craft, military ships, pleasure boats and through traffic.

^cVessels with draft of 18 feet and less.

^dVessels with draft of 22 feet and less.

8. Military Uses: The Department of Defense (DOD) conducts naval operations throughout the Southern California Bight. Detailed operating areas are listed in the COMMANDER THIRD FLEET OPAREA MANUAL (COMTHIRDFLT INST 3120.1J) and were shown on the Visual No. 3 published as a part of the Environmental Impact Statement for OCS Sale No. 48 (USDI, 1979b).

During the discussions relating to OCS Sale Nos. 35 and 48, the DOD indicated they could jointly use several areas including: the Santa Barbara Channel, near shore areas between San Pedro and Carlsbad, a small area south of the juncture of the Santa Rosa and Santa Cruz Islands, and an area southwest of the Tanner/Cortes banks. Subsequently, DOD has indicated that they do not wish to relinquish control over any more areas and are re-evaluating the Long Beach area. This has resulted in the following recommendations: 1) Delete tracts 164, 167, and 169, due to oil and gas OCS activity interference with operation of the Long Beach Naval Shipyard Electronic System Evaluation Facility (SESEF); 2) Delete tracts 56, 59, 105-107, 112-114, 118-121, 125-127, 133-135, 142-144, 195-197, due to oil and gas OCS activity interference with the operation of the Pacific Missile Range; 3) Delete tracts 189-194, 203, 204, 206, 207, 209, 210-221, due to oil and gas OCS activity interference with the operation of the San Clemente Island operating area which is involved with testing, fleet operations, training, and other activities required to maintain fleet operational readiness. The other tracts remaining in the proposed Sale area show possible conflict also with military operations including the Air Force's and NASA's missions at the Western Test Range offshore Vandenberg AFB. However, inclusion of the two stipulations previously used for the other OCS Sales will mitigate this overlap.

9. Cultural Resources: Cultural resources are prehistoric and historic remains that provide information for the reconstruction of man's past cultural systems and behaviors. In addition, this section addresses religious and other cultural elements of concerned ethnic minorities.

Cultural resources comprise a non-renewable resource base, i.e., once gone, they cannot be replaced. Cultural resource management by individuals, institutions, and governmental agencies involves the identification of these resources, their protection, and preservation for maximum longevity (Lipe, 1977).

The preparation of the sections dealing with cultural resources has taken place over the past several years and has involved a variety of research methods. The initial research was performed under BLM contract and resulted in the publication of the following documents: Archaeological Literature Survey and Sensitivity Zone Mapping of the Southern California Bight Area, Volumes I and II (SAI, 1978). A recent update of the shipwreck data portion of this study has also been conducted under BLM contract (Pierson, 1980). A Santa Barbara Channel Prehistoric Mapping Study to provide a detailed analysis of the archaeological potential of the study region was attempted but not completed. Current archaeological records have been obtained from the local archaeological clearinghouses. Additional research, ethnological fieldwork, and consultation has been performed in-house. Consultation has, in part, included the California State Office of Historic Preservation (personal communication 1979, 1980, 1981),

the California State Native American Heritage Commission (personal communication, 1979, 1980), and members of the Native American community (personal communication, 1980, 1981). The Federal Register has been consulted regularly throughout the environmental assessment process to identify properties nominated to or on the National Register of Historic Places. The most recent issue consulted is that of February 3, 1981.

Early Man in California. The initial migration of early people from the Old World across the Bering Land Bridge, a subject of considerable debate, occurred 100,000-25,000 B.P. (before present). MacNeish (1976) has estimated man's entry at 70000 B.P. \pm 30,000. Once in the New World, man's southerly migration was possible only intermittently because of ice barriers across Canada during glaciation. According to Stewart (1973), the most likely times for man's descent into what is now the United States was when land corridors opened through the ice east of the Rocky Mountains approximately 14,000-10,000 B.P., 28,000-23,000 B.P., and 50,000 B.P. However, if initial human occupation occurred earlier than 50,000 B.P., a likely migratory route might have been the now submerged paleo-coast of the Pacific United States.

It is not certain when the California coast was first occupied because worldwide rising sea level has submerged the archaeological remains of those probable early coastal dwellers. Sea level has varied greatly during recent and Pleistocene times. Sea level may have reached a low of 144 m (472 feet) below present mean sea level (MSL) 40,000 B.P. and 124 m (407 feet) below present MSL 18,600 B.P. This means that much of the early coastal region probably occupied by the earliest Californians is presently submerged, and at great depths in many areas. "Any traces of occupancy of California's coast and the lower reaches of river valleys during the period before 8000 B.P. to 7000 B.P. are likely to be covered over, either on the submerged shelf. . .or under alluvium deposited when river valleys were drowned by the rising ocean" (Bickle, 1978:9).

Historic Development. California has a long history of international contact, beginning with Juan Rodriquez Cabrillo in 1542. Initial colonization by Spain, however, did not soon follow Cabrillo's voyage. According to Schuyler (1978:69): "Spain as an imperial power had been entrenched in the New World for over 250 years before California was added to her holdings." The founding of San Diego in 1769 marked a change in California cultural and settlement patterns. The Mission Period, during which 21 missions were founded by the Franciscans, had a drastic effect on the Native American population, which had numbered about 300,000 at the time of contact. Spanish control was lost in 1821 and California became a Mexican land. In 1833 the missions were secularized and much of their holdings was dispersed by land grants. Throughout the period of Spanish and Mexican rule, the Native American population rapidly decreased as a result of war, disease, peonage, and slavery. Mexican rule ended in 1846, but mistreatment of the Native Americans did not. By this time the original population had been decreased by two-thirds to 100,000. By 1870 this number had been further reduced to an estimated 58,000.^a

^aSee Heizer and Almquist (1971) for a thorough discussion of the treatment of minorities in California history.

During the 19th century, many Europeans and Asians immigrated to California to join the Americans from the eastern states who sought their fortunes in the Golden State. Some of the groups well represented in California development include the Chinese, Japanese, Filipino, Irish, Finns, Swiss, Scots, Yugoslavians, Italians, and Germans (Frederickson, 1977). Immigrants continue to increase the population of Southern California, especially those from Mexico and Southeast Asia. Southern California remains an area of much cultural diversity. Although cultural assimilation continues, there remains a number of contemporary groups that continue to maintain distinctive ethnic identities and socio-economic ties within their communities.

Terrestrial Cultural Resources. The coastal lands contain numerous archaeological sites (see SAI, 1978), most of which represent aboriginal resources. The heavier concentration of sites recorded in some counties is partially a reflection of large indigenous populations (e.g., Santa Barbara County), and partially the result of intensive surveying in recent years. There has recently been an increased interest in historical archaeology in Southern California, which has resulted in several recent nominations to the National Register of Historic Places. Several historic lighthouses have recently been nominated to the National Register: Point Loma, Long Beach Light Station, Los Angeles Harbor, Point Fermin, Point Vicente, Anacapa Island, and Point Conception. Southern California's long history has provided a wealth of cultural material, much of which is now being preserved for future generations.

Offshore Cultural Resources. Types of submerged resources found in the offshore region of the Bight are aboriginal remains, and sunken ships and aircraft. The fields of prehistoric and historic marine archaeology have begun to develop only recently in this area. Thus far, most marine prehistoric work has occurred in San Diego, Los Angeles, and Santa Barbara counties. Hudson (1976) has provided a comprehensive review of previous investigations of submerged aboriginal remains along the Bight coast. A major importance of these resources to anthropologists is their potential contribution to knowledge and theory about man's beginnings in the New World. Many submerged prehistoric resources have been preserved depending upon the type of artifacts and the oceanic regime.

Shipwrecks are important resources in historical reconstruction because they represent an instant in the life of a culture and preserve it fairly intact. Preservation is especially good in an area like Southern California where the waters are deep and cold. Increasing numbers of shipwreck artifacts have been recovered offshore California in recent years, and more shipwrecks are being located every year, both by divers and by remote sensing surveys. BLM has records of 582 shipwrecks in the Bight region. Though the locations of historic shipwrecks have been in some cases precisely noted, they are often far, perhaps many miles, from the location of their reported loss. Location errors have occurred because of navigational error, loss report error, and vessel drift. It is not uncommon for an abandoned sinking ship to drift for a long distance prior to submersion. For these reasons, it is important to understand there may be important historic wrecks in areas where none have been reported.

Contemporary Cultural Activities. The coastal portion of the proposed Sale area contains several localities of concern to various resident contemporary ethnic groups.

There are several geographic landmarks and areas that are of special concern to indigenous Native Americans because of what would be termed by western thought as their "sacred" nature. However, the traditional Native American world view does not divide the world into things that are religious or non-religious, sacred or secular. Rather, the world is viewed as an integrated entity, and each thing that exists is part of the nature of the whole.

The "religious" aspects of the lives of Native Americans can be only roughly categorized into separate considerations. Because of the particular nature of the Indian perceptual experience, as opposed to the particular nature of the predominant non-Indian, Western perceptual experience, any division into "religious" or "sacred" is in reality an exercise which forces Indian concepts into non-Indian categories, and distorts the original conceptualization in the process, (Theodoratus, Chartkoff, and Chartkoff, 1979:44).

Some of the geographic sites of concern to contemporary Native Americans are important because they were traditionally used by their ancestors. Some of these places are still being used in traditional ways. For example, Point Conception is a well known location of great importance to the Native American community. It is the "Western Gate" through which souls pass on their way to the afterworld.^a In addition, especially in the Santa Barbara area, there has been a resurgence of interest in indigenous practices and beliefs that has resulted in a syncretic religious movement involving both young and old. The result has been that some traditional ways have been adopted, not only by those individuals for whom these beliefs and practices have been a part of their cultural experience from childhood, but by those for whom this has not been the case.

The intertidal zone of the Bight is the object of intensive gathering activities by members of various ethnic groups, including Mexican, Filipino, Japanese, Korean, Vietnamese, Cambodian, and Hawaiian. The gathering of intertidal biota is, for some, like the Japanese, a recreational activity for the family, which may spend "a day at the tides." For others, it is a subsistence activity that provides an important amount of protein for the diet. Most of the gathering activities, both recreational and subsistence, are illegal. However, law enforcement has been relatively ineffective because of budget limitations and the intensity of these activities.

10. Visual Resources: The Southern California coastline is extremely diverse in its variety of landforms and cultural modifications. These

^aOther than Point Conception, no attempt has been made to list significant sites in order to protect them and the individuals presently using them. Although BLM is aware of the locations of some of these sites, there may be others as yet undocumented. The Native American Heritage Commission has recently undertaken a research project to inventory sacred areas in California.

vary from rugged cliffs to flat sandy beaches, and from completely pristine to densely developed areas. Since the conception of what is aesthetic or beautiful is wreathed in human creativity, emotion, philosophical standards, and cultural background, widely divergent views can emerge from any discussion of visual resources. Certain principles do emerge which are suitable for analytical treatment. These are primarily concerned with the visual perception, as other types of stimuli such as sound and smell are fairly easily characterized as pleasant, neutral, or unpleasant. Visual attractions such as the dramatic meeting of land and water, the framed and unframed views of the ocean, the texture of the vegetation and urban areas, and the overall harmony of the scene add or detract to the quality of life for coastal residents and visitors, and will contribute to the economic success of the tourist industry by attracting vacationers to the shoreline.

The systematic analysis of scenic quality is a complex and difficult task because of the great variety of natural and man-made conditions along the California coast. The Bureau of Land Management had developed a rating system that attempts to objectively rate, on a regional scale, the visual quality of the various landscapes on the California coastline. This system is based on a landscape architectural viewpoint and has incorporated the texture, harmony, variety, cultural modifications, vegetation, and form of the area into the rating methodology.

The results of the rating allowed the coast to be ranked in five basic categories ranging from the most aesthetical pleasing areas to the highly developed industrial areas. The areas which were in the first category included both pristine and developed areas. These are Point Mugu to the Los Angeles County line, Palos Verdes Peninsula, Newport Beach to Dana Point, Solana Beach to La Jolla, Sunset Cliffs, and San Miguel, Santa Rosa, Santa Cruz, Anacapa, Santa Barbara, and Santa Catalina Islands. The second category included Point Conception, Santa Barbara, Los Angeles County line to Playa del Rey, Manhattan Beach to Palos Verdes, Long Beach Marina to Huntington Harbour, Oceanside to Carlsbad, Mission Bay, Point Loma, San Diego Marinas, Coronado, San Nicolas Island and San Clemente Island. The third category are the areas on the Gaviota Coast, Carpinteria, Ventura, Mandalay Coast, Port Hueneme to Point Mugu, Belmont Shores, Huntington Beach, San Clemente, La Jolla Shores, Mission Beach, The Silver Strand and Imperial Beach. The fourth category consists of Port Hueneme, El Segundo, Los Angeles/Long Beach Harbor, Sunset Beach, San Onofre Coast, and North Island. The last category contained only one area which is the industrial area of San Diego Bay.

The complete results of the rating study are given in POCS Technical Paper No. 81-5 (The Granville Corporation, 1981).

D. Future Environment Without the Proposal

1. Expected Change in the Physical Environment

a. Geology: It has been claimed by some that seismic activity may be precipitated or accelerated by OCS drilling and development activities. One effort to test this idea in practice is being carried out by the University of Southern California, Department of Geological Sciences, under contract with the USGS. This seismic monitoring began just before the August 13, 1978 Santa Barbara earthquake and has been successful in demonstrating that neither this nor any subsequent earthquake activity has been within the Dos Cuadras field at depths shallow enough to be influenced by production operations.

Seismic activity may be projected to continue at the indicated historical rate and intensity without the proposal. It has been claimed that seismic activity may be precipitated or accelerated by drilling and/or development activities. There is insufficient information to validate these claims. Rig monitoring and field production seismic activity monitoring programs will continue to provide input that can develop a meaningful information base.

The relative activity of oil and gas seeps may be another geologic phenomenon affected by OCS activity (see Section III.A.1.b). Again unknowns prohibit an accurate assessment of how many phenomena may be influenced by the proposed action.

Oil and gas seep activity has been historically recorded offshore California for many years. The relationship of seep activity with oil and gas drilling and/or production has not yet been proven; however, some postulated correlative relationships are summarized in Section III.A.1.b. The many variables present at any seep location may be related to commercial hydrocarbon accumulations preclude a "cookbook" assessment of the seep activity measured against the proposed action.

In general, it appears that the geologic environment will not be significantly affected by the proposed OCS activity. Should the proposal not occur, then the continued existence of the projected oil and gas resources, as noted in Table I.B.1.b-1, would occur rather than the depletion of the resources during the period indicated in the proposal.

b. Physical Oceanography: Physical oceanographic characteristics of the Proposed Lease Sale No. 68 region are expected to remain substantially the same as conditions since the Holocene (about 10,000 years ago). Current understanding of the forces which drive long-term variations in oceanographic regimes coupled with the irregularity and meagerness of data base make long-term (or even yearly) predictions of currents, waves, temperature, etc., with any degree of confidence highly dubious.

c. Water Quality: Water quality in the Proposed Sale No. 68 nearshore region is expected to continue to degrade, in general, even without the proposal. Increased amounts of domestic and industrial sewage are expected along with an increase in thermal effluents added to the marine environment from new facilities, such as the San Onofre Nuclear Generating Plant. Two exceptions to the general continued water degradation will be the

decreased amounts of organic pesticides (chlorinated hydrocarbons) and polychlorinated biphenyls (PCB's) and decreased amounts of some trace metals (silver).

d. Meteorology: With the exception of air quality, basic meteorological conditions should remain fairly constant, with or without the proposal. Air quality impacts, relative to the future environment are discussed in Section III.D.1.e.

e. Air Quality: Under the Clean Air Act Amendments of 1977, regions that currently exceed the Federal air quality standards must prepare a plan to meet that standard and to maintain compliance with this standard in the future. These plans must show how standards are to be met by 1982, using a combination of stationary source, mobile source, and transportation controls. A formal request to EPA has been made for a December 31, 1987 attainment deadline extension for carbon monoxide from South Coast and San Diego Air Basins, and for ozone from the South Coast and San Diego Air Basins, and from Santa Barbara and Ventura Counties. This was done since attainment by 1982 was considered impossible even after the application of all reasonably available control measures. Thus, based upon legally enforceable air pollution control plans and existing air quality regulations, the entire study area should meet the air quality standards by 1987. Lack of adequate gasoline supplies and fuel conservation efforts may reduce automobile use which would tend to reduce regional vehicular emissions and, therefore, improve future air quality. Conversely, until the California legislature approves an inspection program for automobile emission control devices, future attainment of the standards is not a certainty.

2. Expected Changes in the Biological Environment

a. Plankton: Plankton populations should remain substantially the same as present in the Southern California Bight. Very little is known of long-term trends in species composition of plankton communities, either phytoplankton or zooplankton, and it is therefore impossible to predict much into the future. Increased water quality degradation due to increased volumes of municipal discharges and associated elevated levels of nutrients may result in pollution-tolerant plankton becoming established. More tropical species of plankton may invade and become established in areas which receive thermal effluent from power plants.

b. Benthos: Forecasting the future of a complex environment like the Bight over the next 25 years is extremely difficult because of the many variables involved. However, with the inevitable population expansion and development along wetlands and the coast of Southern California, some corresponding impact to the benthic environment is expected. Although the rate of degradation will be decreased due to State and local commitments and legal mandates, the amount is unquantifiable and unpredictable except in general terms.

The principal non-oil effects to the subtidal benthos will probably come from pollution and waste disposal, while the principal non-oil impact to the intertidal will be from pollution and direct human trampling and souvenir collecting, both largely a function of population growth. At the same time, there have been two previous lease sales in the Bight which have a probability of oil

spills. Although the oil potential is proving to be less than predicted in the early 1970s by Western Oil and Gas Association (OCS Sale No. 35 EIS in: U.S. Department of the Interior, 1975), the amount of oil available and spill potential from these sales is still theoretical.

c. Fish and Fisheries: Commercial and sport fishing are expected to increase as the population in Southern California grows. The amount of each species to be caught will depend in part on fish abundance, weather conditions, and harvest regulations. Commercial fish landings are also greatly influenced by market demand. Since our marine resources are limited, careful management will be essential to their survival. However, fisheries management is very difficult and large increases and decreases in populations are anticipated. These changes will affect the population sizes of other species, whether these species are fished or not. Without the proposal, the potential for oil spills and their predicted impacts will be less but still could result from existing oil and gas activities. Changes in population sizes also will be caused by other activities, particularly domestic and industrial pollution.

d. Marine Mammals and Seabirds

i. Pinnipeds: The California sea lion, the most abundant pinniped encountered in the Southern California Bight (SCB) during the survey of Dohl, et al. (1980), was severely reduced in numbers by commercial hunters in the early part of this century. The Southern California population has substantially recovered in recent years and is considered to be stable (Dohl et al., 1980; Bonnell, personal communication, 1981). The northern fur seal and the northern elephant seal, both commercially desirable species in the late 1800s and early 1900s, have recently shown substantial increases in numbers within the SCB (Bonnell, et al., 1980). Harbor seals within the SCB are also showing steadily growing population numbers and currently represent approximately 30 percent of the state's total. The Steller sea lion SCB population is declining, with 10 animals sighted during 1980 (Stewart, 1980). According to Bonnell, et al. (1980), this species has a large population of undetermined size in the Gulf of Alaska. The Guadalupe fur seal, a rare visitor to the SCB, was exploited to near-extinction in the late 1800s. The world population, currently centered on Isla de Guadalupe, Mexico, appears to be recovering at a slow but satisfactory rate (Fleischer, 1979; Bonnell, et al., 1980). Assuming that this population trend continues, more vagrant Guadalupe fur seals could be observed in the SCB in coming years, possibly forming a resident population.

ii. Non-Endangered Cetaceans: Dolphin and porpoise species which are commonly encountered in the SCB include the common dolphin, Pacific white-sided dolphin, Dall's porpoise, Pacific bottlenose dolphin, Northern right whale dolphin, grampus, and Northeastern Pacific long-finned pilot whale. Due to the difficulties encountered in censusing these species, population growth trends are unknown, although each SCB population is considered to be healthy (Bonnell, et al., 1980).

iii. Non-Endangered Seabirds: The vast majority of seabird species sighted in the SCB are not resident, being either visitors or migrants to the area on a seasonal basis (Bonnell, et al., 1980). Briggs, et al. (1978) indicate that the total number of migrant seabirds visiting the Bight fluctuates from year to year. Resident seabird populations in the SCB

appear stable (Hunt, et al., 1978), although many of the nesting species remain susceptible to human disturbance, natural and introduced predators, habitat loss, and environmental pollution, among other factors.

iv. Summary: Within the limitations of current censusing techniques, pinniped populations which frequent the Bight appear to be healthy and stable. If environmental conditions do not appreciably change in the future, current population trends for SCB pinnipeds should be maintained. In most cases, the growth trends for non-endangered cetacean species within the SCB are unknown. Resident and migratory seabird populations within the Bight are considered stable but highly sensitive to environmental degradation.

e. Endangered and Threatened Species: Seven federally-listed endangered whale species are known to occur within the waters of the Southern California Bight (SCB). Those individuals sighted during the three-year study of Bonnell, et al. (1980) included representatives from the blue, finback, gray, humpback, Sei, and sperm whale species. Another whale species, the endangered Pacific right whale, had been sighted in 1981 by John Strickley of Santa Barbara in the Santa Barbara Channel, but was not seen during the most recent survey (Bonnell, et al., 1980) of marine mammals and seabirds of the SCB.

The gray whale population, by virtue of its breeding and migratory habits, is relatively easy to census. Bonnell, et al. (1980) have shown that the gray whale population is increasing in size, representing a potentially stable population. If environmental conditions do not appreciably change in the future, current trends for the gray whale population should be maintained. The remaining endangered whale species present within the SCB are more difficult to census for a variety of reasons. Blue and finback whale populations, two of the most common large whale species encountered in the survey, were noted throughout the SCB, particularly offshore in the vicinity of the Santa Rosa-Cortes Ridge. Humpback, Sei, and sperm whale populations were less frequently seen, preferring offshore areas and only 3 right whales have been sighted in California coastal waters this century. As a result, population trends for these species are relatively unknown and predictions as to future changes in these whale populations cannot be determined.

The southern sea otter, a federally-listed threatened species, is highly susceptible to losses of insulation and subsequent hypothermia as a result of contamination by oil. Since offshore oil transportation will continue even without further OCS development, it is anticipated that some sea otters will die in the event an oil spill occurs and strikes some portion of the sea otters' range. Studies are currently being conducted by the FWS to determine the feasibility of transplanting a portion of the sea otter population to San Nicolas Island or other locations. If successful transplants occur, the threat from an oil spill to the southern sea otter population should be reduced.

The California Brown Pelican population within the SCB occupies the northern limit of its breeding range. The boundaries of a species' range are established when a number of minimal and maximal environmental conditions are encountered. Thus, a relatively minor change in one or more environmental parameters critical to the brown pelican could have a major effect upon the population. Since the reproductive success of this species within the SCB has fluctuated in recent years, it is expected that the brown pelican population will continue to fluctuate in the future.

The California least tern was formerly a common breeding resident on the mainland, nesting in undisturbed sandy beach habitats. Although this species' reproductive failures and radical reductions in population size have been attributed to disturbances of nesting areas, the population is considered to be stable due to a recent habitat management program (Bonnell, et al., 1980).

The California clapper rail and the light-footed clapper rail, two federally-listed endangered subspecies, are residents of select coastal salt marshes and estuaries of the California coast. The light-footed clapper rail, the only clapper rail found along the southern California shoreline, is known to be extremely susceptible to habitat destruction (e.g., marsh reclamation) and pollution. The southern California population is considered to be stable (S. Wilbur, personal communication, 1981), due in part to implementation of the Light-footed Clapper Rail Recovery Plan and the acquisition of select marsh and slough areas as public lands.

The American peregrine falcon and the southern bald eagle were common throughout the Channel Islands during the 1930s. Since the 1950s, both species have been expatriated from the islands. Successful transplantation of bald eagles has occurred on Santa Catalina Island. Recolonization of the islands by the peregrine falcon from an increasing mainland population may occur naturally (National Park Service, 1980). The successful recolonization of the Channel Islands by these two species will result in a decline in the number of seabirds, a common prey species of the peregrine falcon and the bald eagle.

The California Condor population is declining. A captive breeding program has been initiated in an attempt to reverse this decline.

The list of endangered flora from San Clemente and Santa Barbara Islands includes the San Clemente Island (SCI) broom, SCI bushmallow, SCI Indian paintbrush, SCI larkspur, and Santa Barbara Island (SBI) liveforever. Among the endangered fauna for these islands, the list includes the San Clemente loggerhead shrike and the Santa Barbara song sparrow, with the San Clemente sage sparrow listed as a threatened species. Endangered plant species have been designated as such because of the physical destruction resulting from the presence of introduced grazers (e.g., goats, sheep, rabbits) on the islands. Physical destruction of the native plant species has subsequently resulted in a loss of habitat for the endangered fauna. Efforts are being made to eliminate the introduced species from the islands. In the event that the eradication efforts are successful, the chances for the recovery of these species to their former numbers would increase. The sole exception to this scenario lies with the Santa Barbara song sparrow, a species that may be extinct (FWS, 1980).

Endangered or threatened sea turtle species are rarely observed in southern California since the SCB is considered as the northern limit of their range. Recent sightings within San Diego and Long Beach harbors are attributed to migrant individuals. No breeding of these species is thought to occur in southern California (J. Lecky, personal communication, 1981) and the current population status within the SCB is not known.

f. Sensitive Biological Areas: The above discussion of intertidal benthos (III.D.2.b) can be applied here since most of the legal Sensitive Biological Areas are intertidal areas. Their future will primarily depend upon the quantity and quality of domestic pollution, enforcement and prevention

of intertidal collecting, and reduction of the amount of human traffic allowed on the sensitive areas.

The largest impact from previous oil activity will depend upon the number, quantity, and frequency of spills reaching the sensitive areas. Although unpredictable, except in the most general terms, one can estimate that areas having the greatest amount of oil development, coupled with high oil spill hit probabilities based on the oil spill model, will have the largest potential for oil spill impact from previous oil leases. Based upon these considerations, the areas of greatest oil spills concerns are: Channel Islands National Park and Marine Sanctuary, other areas within the Santa Barbara Channel, and mainland areas just to the south of the San Pedro Shelf.

g. Marine Sanctuaries: Resources within the Channel Islands Marine Sanctuary are regulated by the National Marine Fisheries Service, National Park Service, and The California Department of Fish and Game. There is some probability of adverse effects to biological resources within the Sanctuary from oil spill(s) resulting from previous lease sales and existing tankering activities. Although the impact on subtidal benthos and shallow water fish is not as well known as that of intertidal species, available evidence suggests it is less severe. Thus, intertidal species are at a greater risk from past or future lease-related activities.

h. Terrestrial Resources: The future of terrestrial biological resources will continue to be impacted from factors resulting from human population expansion, the extent of which will depend upon the Coastal Commission and local government and their philosophy during the next 25 years.

3. Expected Changes in the Socio-Economic Environment

a. Demography: The population estimates shown in the Table III.D.3.a-1 are taken from the Curtis Harris Multi-Regional Multi-Industry Model. Population increases forecast by the Harris Model are expected to occur in the study area as a result of natural increases plus migration associated with new or expanding economic activity such as previous OCS lease sales, State tidelands oil development, the Space Shuttle project, the Missile-X program, and the LNG terminal construction. This forecast does not account for activity which may result from leasing in State waters north of Point Conception as these estimates are not presently available. Population forecasts vary due to differing assumptions concerning net migration and natural increases. For comparison, projections made available by the State of California, Department of Finance, for the years 1981 and 1982 are shown below the forecast made by the Harris Model. Although the distribution of population in these two estimates differs slightly, the regional totals are in close agreement. From 1982 through 2007, population in the study area is forecast to grow by about 1.5 percent per year.

b. Coastal Economy: The California economy in 1981 is expected to grow in real terms faster than the U.S. as a whole (United California Bank, 1980). Primary factors affecting growth are a further expansion in numbers of aerospace-defense contracts and in output in the computer and electronics industries. Exports of California products are also projected to grow, especially agricultural products and aircraft and electrical (communications) equipment. A prime growth-inducing factor is foreign investment which is expected to be continued to be attracted to California. This investment will provide new funds and expansion of jobs.

The Harris Model forecasts jobs, earnings, value added and other economic parameters for the 25-year study period. In terms of jobs and earnings, the five leading industrial sectors in the study area through the 1990s will be: retail trade; medical and educational institutions; federal civilian government; finance, insurance and real estate; and manufacturing. Table III.D.3.b-1 shows selected economic variables forecast by the Harris Model for the Proposed Sale No. 68 study area.

c. Public Facilities and Services: Expansion of local population and employment may exert pressures on the ability of communities to provide public facilities and services. As a result of an inventory of the current and projected level of services provided in the study area, potential constraints on growth. Services vulnerable to oil spills were identified.

Water Supply. A limitation on water supply could occur in the early 1990s to areas within the 6-county (including portions of Ventura, Los Angeles, Orange and San Diego Counties) service area of the Metropolitan Water District (MWD). Two situations combine to produce the potential shortage. In 1985, the MWD allotment from the Colorado River will be cut by 662,000 acre feet per year (to 55 percent of the present allotment). Secondly, there is some doubt that the Peripheral Canal will be built. If it is not built as part of the State Water Project to carry around the Sacramento/San Joaquin Delta, the MWD will not be able to receive its full contract allotment from that source. By the early 1990s, there could be water shortages in many communities, particularly in Ventura and Los Angeles counties.

TABLE III.D.3.a-1

STUDY AREA BASE POPULATION FORECASTS
WITHOUT PROPOSED SALE NO. 68 ACTIVITY

<u>County</u>							
<u>Year</u>	1981	1982	1987	1992	1997	2002	2007
Santa Barbara	308,655 302,600 ^a	320,308 306,700 ^a	338,273	351,420	352,383	361,658	380,889
Ventura	526,792 529,200 ^a	542,521 544,000 ^a	609,004	669,122	718,275	769,190	829,366
Los Angeles	7,253,151 7,197,700 ^a	7,353,954 7,236,900 ^a	7,931,588	8,561,804	9,231,570	9,962,378	10,792,304
Orange	1,929,675 1,959,900 ^a	1,963,017 2,004,500 ^a	2,125,916	2,279,377	2,418,807	2,565,199	2,739,292
San Diego	1,862,773 1,896,200 ^a	1,918,342 1,943,400 ^a	2,164,778	2,391,788	2,596,227	2,788,993	2,986,322
Regional Total	11,881,046 11,855,600 ^a	12,098,142 12,035,500 ^a	13,169,559	14,253,501	15,317,262	16,447,418	17,728,173
California	23,369,920	23,791,640	25,981,448	28,220,468	30,175,928	32,194,704	34,466,872

Source: Curtis Harris Multi-Regional, Multi-Industry Model, 1980 Outputs. (Dowling, 1981).

^aState of California, Department of Finance

TABLE III.D.3.b-1
 SELECTED ECONOMIC BASE PROJECTIONS^a
 WITHOUT PROPOSED SALE NO. 68

Year	Civilian Labor Force	Private Investment	Personal Income	Value Added ^b	Gross Regional Product ^b
				1976 Dollars	
1982	5,267,134	18,314	102,969	115,830	128,865
1987	5,949,465	20,644	126,109	141,703	157,061
1992	6,528,477	22,786	147,318	167,128	184,834
1997	7,100,754	24,986	170,762	194,491	214,677
2002	7,719,648	27,635	197,265	226,004	248,885
2007	8,441,042	30,868	228,924	263,680	289,670

^aIncludes Santa Barbara, Ventura, Los Angeles, Orange and San Diego Counties.

^bExpressed in thousands.

Santa Barbara County obtains its water primarily from the water resources of the Santa Ynez River Basin and groundwater supplies. After 1990, deficiencies are likely unless there are changes in the water supply system and/or reductions in use.

Wastewater Treatment. Need for additional capacity for wastewater treatment is also projected for the near future in certain small sanitary districts in Santa Barbara County as well as the north coast area of Ventura County (north of Ventura River).

Public Schools. A survey of school administrators in Santa Barbara and Ventura Counties revealed that there is little room for new students in Ventura county schools and that the Oxnard and Port Hueneme districts report overcrowding. Santa Barbara County districts can accommodate about 15,000 additional students, (Blaney-Dyett, 1981).

Electricity Supply. A major oil spill ($\geq 1,000$ bbl) from existing OCS activity and tankering could result in a temporary disruption of electricity supplies. The disruption of electricity could occur if the cool water intake system was fouled by oil from an oil spill. There is no expected impact on electricity supplies from the expected change in regional economic activity.

d. Coastal Land Use: Future land use in the five Southern California coastal counties will continue the conversion of agricultural lands to urban uses. Housing will continue to be in demand throughout the coastal counties. The current economic situation is slowing the housing market in both sales and new construction starts. This in turn may have long-term impacts on the future housing situation in availability and affordability. Santa Barbara and Ventura Counties, two of the faster growing counties, will continue to have high housing demand. Santa Barbara County will continue to feel the impacts of induced growth from large scale projects (MX, Space Shuttle, LNG Terminal) especially in the Santa Maria-Lompoc area. Ventura County will continue to have housing pressure from the westward expansion of the greater Los Angeles urban population. The pressure for continued growth will have corresponding impacts on water supplies, waste water treatment systems and other public facilities in all five counties. The coastal zone will continue to have a high demand for housing inducing higher housing costs. Throughout the five-county area, affordable housing will continue to be in low supply.

As growth and housing availability is partially a function of policy decisions made by local governments, local entities should consider their options to improve and control the impacts of continued growth. Options include limited expansion into agricultural areas and vacant lands, zoning to encourage infilling, benefits to encourage redevelopment, mixed use of commercial and residential, and increasing the allowable density. Ordinances controlling growth and completions of the Local Coastal Programs are methods that can, and are, being used to control and regulate growth impacts. (Reference also Section III.D.3.)

e. Recreation: The expected change in recreational activities without the proposed sale would be a continued increase in amount of participation and construction of facilities. The restraints on this growth are availability of cash and gasoline, and these would tend to cause people to utilize those facilities which are closer to their homes.

Gathering by ethnic groups (discussed in Section III.C.9) will continue to be a problem, because of excessive stress being placed on the intertidal areas by over-harvesting. This has an impact on recreation by reducing or eliminating tidepooling and/or sportfishing in the affected area due to the decimation of the resource. Controls over the gathering are enforced by the California Dept. of Fish and Game, however, illegal excessive gathering will tend to continue among certain ethnic groups who depend on the intertidal zone as a major food source. (See Sections III.C.9 and III.D.3.i.)

Tourism will continue to increase due also to the increase in available leisure time and money; however, if there is a reduction in the available supply of gasoline, there is expected to be a drop in tourism as was seen in the 1974 and 1979 gasoline shortages.

f. Oil and Gas Infrastructure

i. Refineries: Without the proposal, there would be an increase in tankers to Southern California to replace the loss of potential Proposed OCS Lease Sale No. 68 oil and natural gas. There would be an increase in Alaskan and foreign crude to Los Angeles Basin refineries. Also, there probably would be an increase in liquified natural gas (LNG) to the proposed Point Conception LNG facility.

Bonner and Moore Associates (1980) have forecasted that there could be an increase of 18 percent in crude demand to California refineries from 1978 to 1985, based only on product demand growth. Also, for March 1980, there were approximately 16 percent foreign and 36 percent Alaskan (assumed as inter-state) crude received at California refineries (III.C.6). Consequently, loss of Proposed Sale No. 68 crude could be replaced either by Alaskan or foreign crude.

ii. Offshore Structures: The Federal leasing, exploration, and development statistics covering all past Federal lease sales is presented in Table VIII.F-1. Presently, four platforms have been proposed by the oil industry for installation on the Federal OCS off Southern California. The predicted development activities on previously leased tracts on the Federal OCS are presented in Table III.D.3.f.ii-1. USGS predicts a total of 15 platforms to be installed on previously leased Federal OCS tracts. Activities associated with increased development on the OCS include: increased use of drillships, platforms, supply boats, and helicopters.

Comparable information is not available for the predicted numbers of structures in State waters.

iii. Pipeline Systems: Without the proposals there could be pipelines installed on both onshore and offshore areas to meet the needs of existing leases. There could be an oil transmission pipeline constructed from the Point Conception area to the Los Angeles refineries near U.S. Highway 101. Also, there could be a conversion of existing onshore gas pipelines to transport crude. Development of offshore pipelines would depend on the numbers and locations of oil discoveries made during the exploration phase on currently held leases.

TABLE III.D.3.f.ii-1

PREDICTED DEVELOPEMENT ACTIVITIES
ON PREVIOUSLY LEASED TRACTS*

LEASE SALE	PLATFORMS (Numbers)	WELLS (Numbers)			
		Exploration	Delineation	Platform	Subsea
1966 / 1968	11	2	8	365	10
No. 35**	2		2	100	2
No. 48	<u>2</u>	<u>25</u>	<u>8</u>	<u>30</u>	<u>1</u>
TOTALS	15	27	18	495	13

* Excludes existing platforms and wells drilled and to be drilled from them.

** Includes Leases P-0296, P-0300, and P-0301 only.

Source : USGS, October 3, 1980.

iv. Onshore Facilities: There would probably be no additional processing facilities constructed; however, several existing processing facilities may be modified to meet the demands from existing leases.

g. Transportation Systems

i. Ports and Shipping: Commercial vessels using the Traffic Separation Scheme through Santa Barbara Channel would increase approximately from 19 to 38 percent from year 1980 to 2000. The proposed LNG project could result in LNG tankers from Alaska and Indonesia to the LNG terminal at Point Conception. There could be an increase in foreign and Alaskan tankers carrying crude oil and LNG to the Southern California area to replace the loss of potential Proposed Sale No. 68 crude oil and gas. On the assumption that a 120,000 dead weight tanker would transport either Alaskan or foreign crude, it was estimated that approximately 3.2 tankers of this size would be needed per month to replace the estimated Proposed Sale No. 68 crude for 1990 (Yamasaki, 1981).

The Space Transportation System at Vandenberg Air Force Base could use barges to transport spent rocket boosters between Port Heuneme and Vandenberg Air Force Base. The proposed onshore pipeline from the Santa Barbara Channel could be in operation resulting in a reduction in local tankering or barging from the Santa Barbara Channel to Los Angeles county ports (USDI, 1979b). For 1980, there were approximately 10 vessels (tankers and barges) per month transporting crude from Santa Barbara Channel area to Los Angeles (LA) basin refineries. This estimate was based on the assumption that all vessel arrivals to the six mooring locations in Santa Barbara Channel (Cojo Bay, Gaviota, Ellwood, Carpinteria, Ventura, and Ventura River) transported crude by vessels to LA Basin. From November 1, 1979 to October 31, 1980, there were 121 vessel arrivals at above six mooring locations (Terveen, 1981).

ii. Additional Transportation Systems: Helicopters will continue to be used to transport men and light equipment to activities on currently held leases from the following airports: Santa Barbara Municipal, Oxnard, Los Angeles International, Long Beach Municipal, John Wayne (Orange County) and San Diego International. There would be a slight increase in airport traffic during the exploration and development period.

There is expected to be increased traffic on the highways and railroads during the exploration and development on currently held leases to transport oil and gas-related equipment, supplies, and manpower. Increased traffic would occur at Carpinteria, Port Heuneme, Port of Los Angeles, and Port of Long Beach.

h. Military Uses: Without Proposed Sale No. 68, impact to military operations in the Southern California Bight will be minimized. Other uses of the area are continually increasing as ship traffic and recreational uses related to the increasing demands and population density in the coastal counties goes up. There are thought to be significant hydrocarbon deposits in the Southern California offshore area. Since nearly all of this area is used by the military, it is quite likely that the space-use conflict will continue to exist and it will be evaluated as each future OCS Sale is evaluated.

i. Cultural Resources: With increased residential and industrial development, the coastal lands will be more intensively surveyed for archaeological sites. As a result, more resources will be identified and

archaeological data will increase. Although some mitigation will be undertaken in most cases, it is likely some damage and looting will occur. There will be continued deterioration with age of some historic landmarks, but the current interest in protection and preservation, if it continues, will positively affect an even greater number of these sites than at present. Coastal Native Americans will find subsistence and ceremonial gathering increasingly difficult as the supply of traditional foodstuffs decreases. Other ethnic groups will find intertidal gathering increasingly difficult with a decrease in supply and a possible increase in law enforcement efforts. Acculturation with western culture will also decrease gathering efforts. For a discussion of how these collecting activities affect the intertidal benthos and sportsmen see Sections III.D.2.b and III.D.3.e.

Offshore aboriginal artifacts and sites and historic shipwrecks will be subject to continued artifact hunting by sport divers. Some submerged cultural resources will be destroyed or damaged by natural forces as they continue to lie on the bottom. However, those historic and prehistoric resources protected by sediments or in deep cool waters will continue to be preserved for a great many years.

j. Visual Resources: Without the proposal, the expected change in the visual resources of the area will be relatively minor, and restricted primarily to increases in residential development along the backshore, and the development of recreational facilities along the shore. This will tend to cause a slight reduction in the quality of the visual resource. This development will be controlled by local coastal plans (see Section I.B.8.a) and will be the responsibility of the local areas. Overall, the quality of the visual resource is expected to remain at about the present level with minor changes.

CHAPTER IV

IV. ENVIRONMENTAL CONSEQUENCES

A. Significant Impact Producing Agents

1. Oil Spills: The USGS Oil Spill Risk Analysis model has been described (Lanfear, et al. 1979; and Smith, et al. 1980) and run for previous California OCS Oil and Gas sales (BLM 1979; and BLM 1980). The model has been upgraded and increased in complexity each time it has been applied to a Sale. For this Sale, the various trajectory data tabulated by USGS (Samuels, et al. 1981) is 204 pages and combined with the required analysis is too lengthy to include in the body of this EIS. The following data represents a summary of the results showing the resultant probability of potential oil spill impacts based on historical data. For a more detailed analysis, which requires looking at the conditional probabilities upon which the probabilities of oil spill impact are determined (including seasonal breakdowns), the analyst can refer to POCS Technical Paper No. 81-2 (Cooke, 1981), entitled "Oil Spill Risk Analysis of Proposed OCS Sale No. 68 Offshore Southern California." The original data from which all the above analysis is accomplished can also be obtained from USGS (Samuels, et al. 1981).

a. Oil Spill Model

Description. For a detailed technical description of the Oil Spill Risk Analysis Model, the reader should refer to the references noted in the previous paragraph. Basically, targets, shoreline segments, wind and current information is entered into a computer. A point, simulating a spill is started from a preselected location (normally the center of the tract to be evaluated), and moved in 3-hour increments using the vector sum of wind and surface ocean current information. The spill is tracked until it (the point) impacts a target or a simulated 30-day period has elapsed. Data is tabulated representing 3-, 10- and 30-day intervals. This data is referred to as the "conditional probability" (spill impact probability assuming a spill has occurred). The risk of a spill occurring is based on historic accidents and is a function of the amount of oil produced from a field. The risked data is combined with the conditional probability and is used to determine the probability of an oil spill impacting a particular location or resource as reflected in the following tables.

i. Model Parameters: Exploration and development launch points: Simulated oil spill launch points were taken from each of the proposed tracts shown in Figure IV.A.1.a-1. This information was combined in clusters as shown within the polygons and designated as subdivisions a1 through a10 for the purpose of assigning resource values to determine the probability of spill occurrence.

Transportation Launch Points. Simulated oil spill launch points were used along the routes shown in Figure IV.A.1.a-2 to determine the probability of spills occurring during transportation of oil in the Southern California

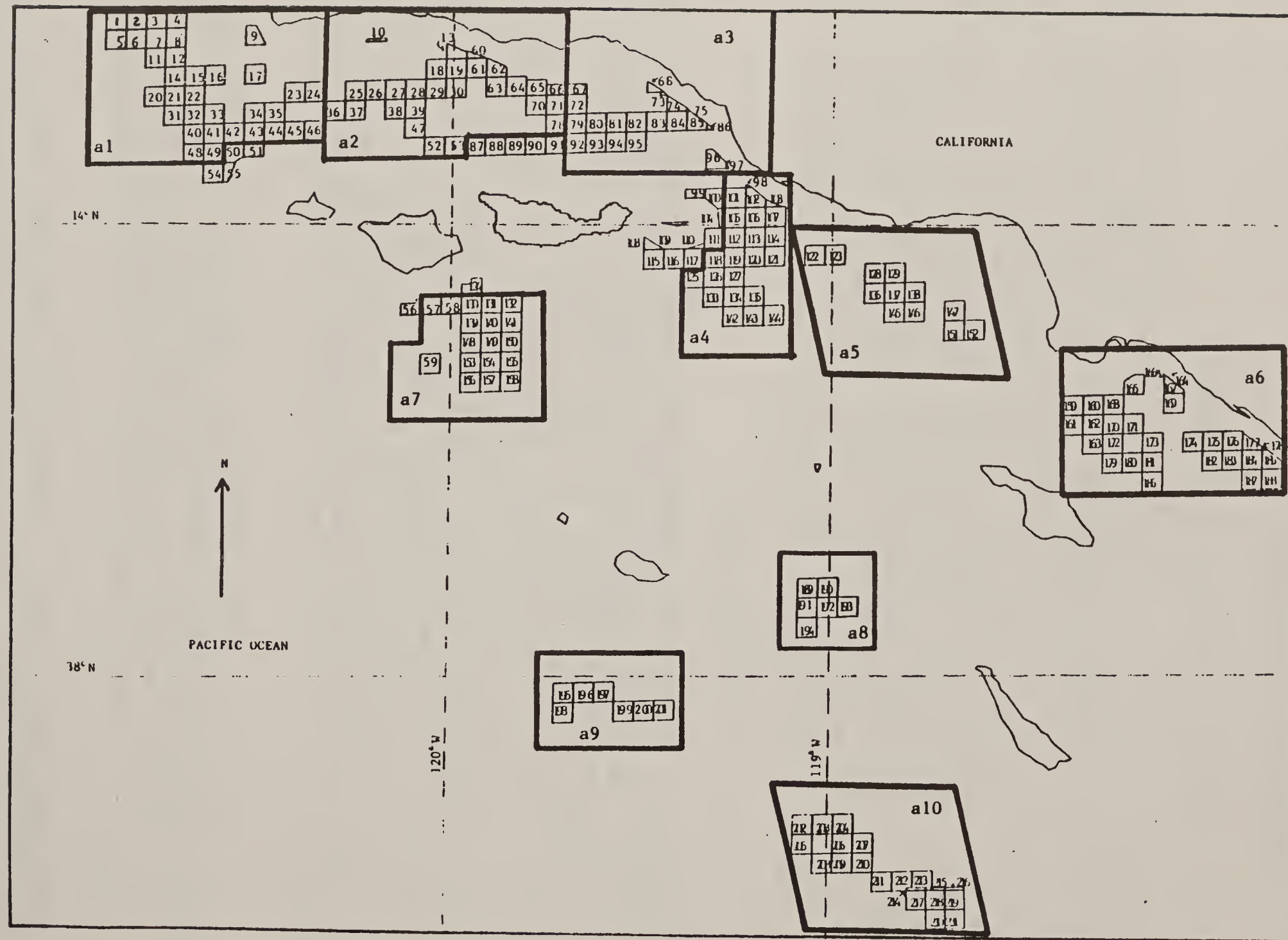


Figure IV.A.1.a-1 Map showing the ten subdivisions (a1-a10) of the proposed lease tracts (P1-P221) for Southern California OCS Lease Sale No. 68. Tracts not included in any subdivision are within the proposed marine sanctuary and are treated separately.

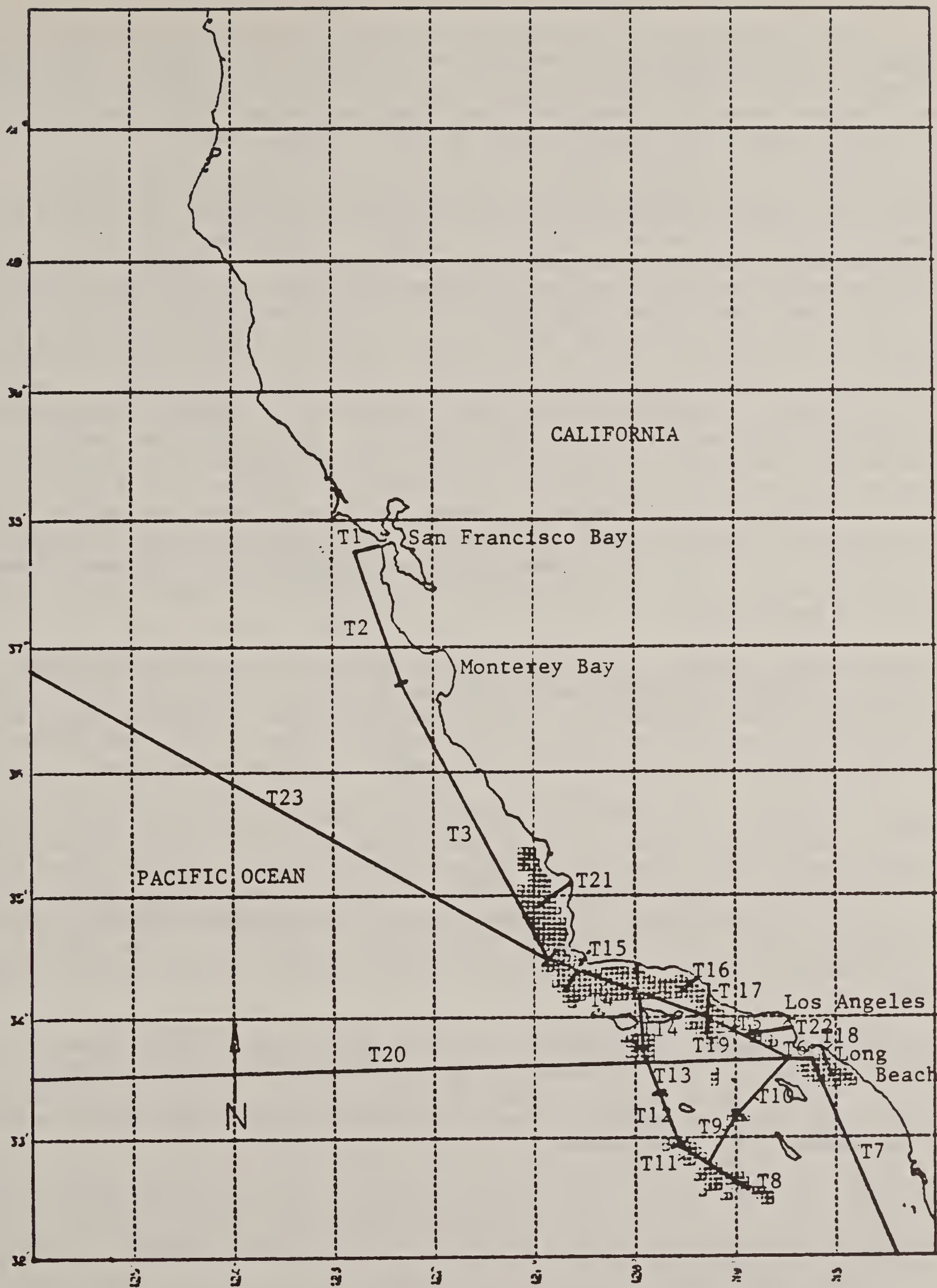


Figure IV.A.1.a-2 Map showing the transportation route segments (T15 to T18 and T21, T22 are proposed pipelines; T1 to T14 and T19, T20, T23 are proposed tanker routes), polygons represent proposed and existing lease tracts.

Bight. The following tables reflect the risk associated with the most probable transportation scenario which includes a combination of pipelines and tankering. An alternate scenario showing only tankering was evaluated and that data is included in the POCS Technical Paper No. 81-2 (Cooke, 1981).

Tracts Within the Channel Islands National Marine Sanctuary. In Figure IV.A.1.a-1 there are several tracts that lie entirely within the marine sanctuary and were not included within the boundaries defining the ten sub-areas for oil and gas resource estimates (a1, a2, a4 and a7). Trajectories were run for the tracts within the marine sanctuary and values for conditional probability of impact were determined. As can be seen in POCS Technical Paper No. 81-2 (Cooke, 1981), the values for these tracts are similar to nearby tracts within the boundary and therefore, the few tracts involved will not skew or change the values for the overall areas defined by the sub-area boundaries. The oil and gas resource values determined for each area also have a certain variance allowing for the uncertainty of the input data. The oil and gas resource estimates associated with the tracts within the marine sanctuary are less than the variance for each sub-areas so the probability of impact on various resources is not affected by including or excluding the tracts within the marine sanctuary in the overall oilspill runs. Therefore, these tracts were not included in the overall run. The only effect that leasing tracts within the marine sanctuary will have on the oil spill analysis will be in the time required for a potential spill to reach shore.

Surface Ocean Currents. Surface ocean currents were programmed into the computer reflecting monthly values between 0.1 and 0.5 knots using the CALCOFI geostrophic flow information as the primary data base. Nearshore areas were augmented by data obtained from specialized local studies when the information was available and satellite photography used to fill in other gaps.

Wind. Wind data is limited to a particular format, frequency of reporting (1-hour intervals, 24 hours a day), and length of time (at least 5 consecutive years) that at this time can only be provided by certain stations which report to the National Climatic Center. Arcata, Monterey, Vandenberg, San Nicolas Island and San Diego were selected as being the most representative in their respective areas along the coast. This data is reduced to a transition matrix and is applied during a spill run in 3-hour increments by the computer using a Monte Carlo technique.

Shoreline Segments. To determine potential impact areas, the California shoreline was divided into segments approximately 27 miles long as shown in Figure IV.A.1.a-3. Offshore islands have two numbers to show which side of the island would be impacted. When a simulated oil spill run impacts a shoreline segment, it is terminated.

Targets. Special target areas that are either at sea or cannot properly be evaluated by inclusion within a shoreline segment are shown in Figure IV.A.1.a-4. During an oil spill run, when a spill "hits" one of these targets, it does not terminate, but keeps going.

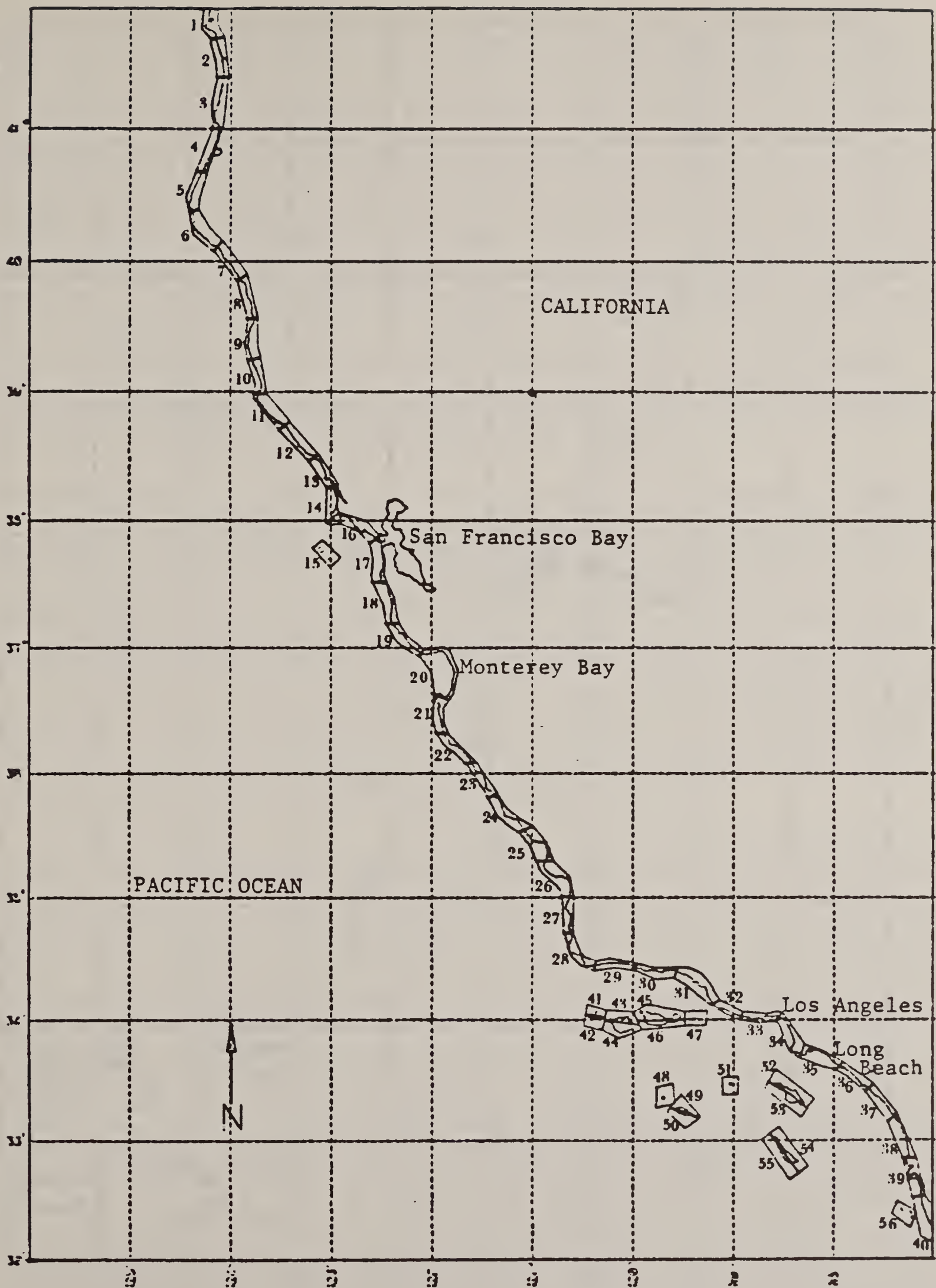


Figure IV.A.1.a-3 Map showing the division of the California shore-line into 56 segments of approximately equal length.

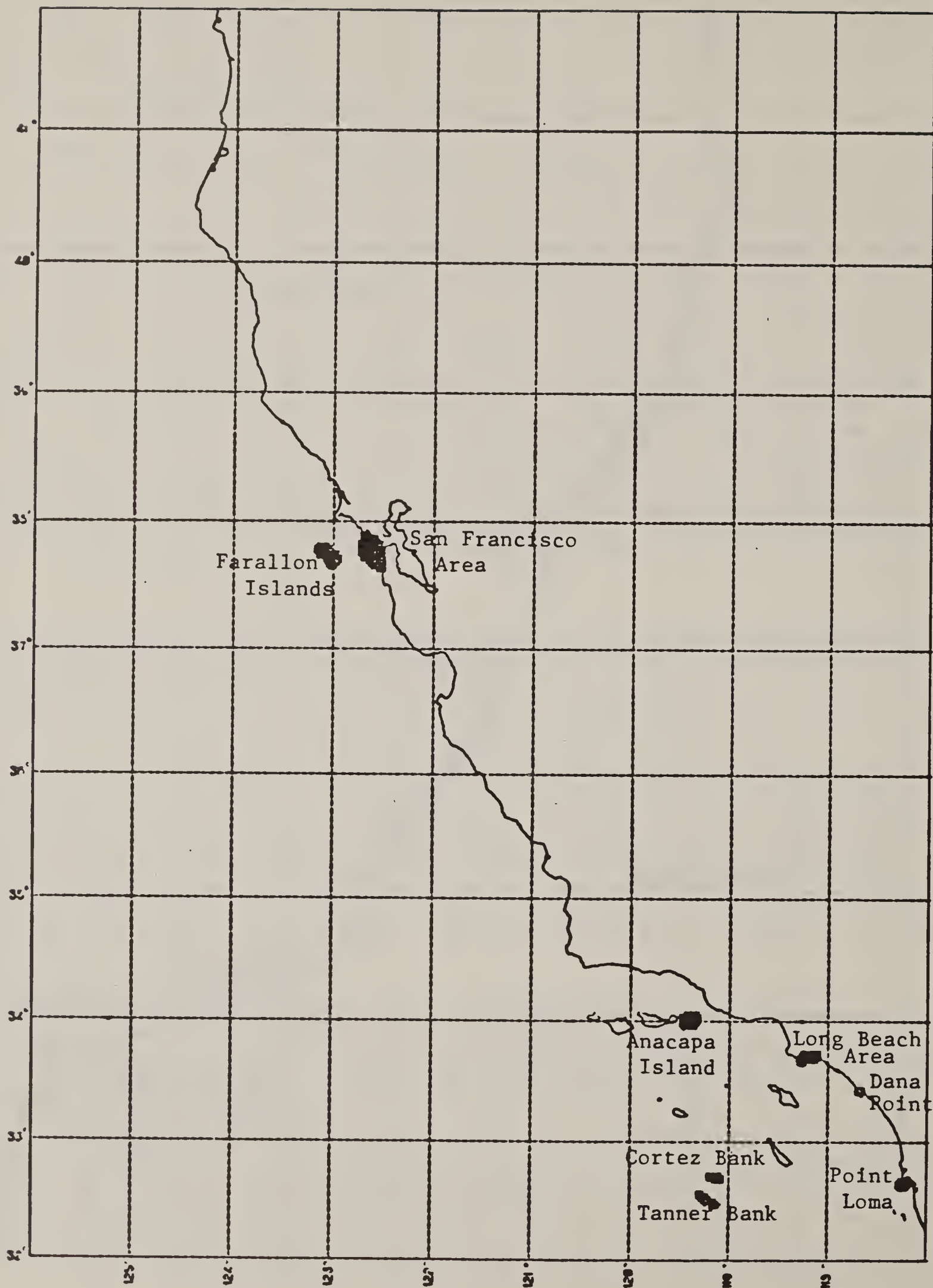


Figure IV.A.1.a-4 Map showing the locations of eight targets, Southern California OCS Lease Sale 68: cross hatching indicates areal extent.

Probability of Oil Spill Occurrence. There are currently 23 oil refineries (Table III.C.6-1) operating in the Southern California area that require an input of 1,365,420 barrels per day of oil when operating at full capacity. This means that during the probable 25-year life of the Sale No. 68 fields, 12.5 billion barrels of oil must be provided. Whatever is not produced in the area will have to be imported. For purposes of this analysis, it will be assumed that during the 25-year period, 7.375 billion barrels of oil will be imported through Los Angeles Harbor. California onshore production will contribute 2.6 billion barrels (Conservation Committee of California Oil Producers, 1970-1980). California State tidelands will contribute 720 million barrels (California State Lands Commission, 1980). Existing Federal OCS leases in Southern California will contribute 854 million barrels (U.S. Geological Survey, 1980c). Lease Sale No. 53 (assuming all resource in the Santa Maria Basin are developed) will contribute 788 million barrels (U.S. Department of the Interior, 1980c). Proposed Sale No. 68 leases will contribute 67 million bbl from the Santa Barbara Channel, 70 million bbl from the Inner Banks and Basins, and 93 million bbl from the Outer Banks and Basins assuming that the full amount of projected oil is found and produced (U.S. Geological Survey, 1980d).

The probability of oil spill occurrence is based on the fundamental assumption that realistic estimates of future spill frequencies can be based on past OCS experience. This analysis assumes that spills occur independently of each other as a Poisson process, and that the spill rate is dependent upon the volume of oil produced or transported. This report examines, where the data permits, spills in 3 size ranges: 10,000 barrels or greater; 1,000 barrels or greater (which includes the first category); and between 50 and 1,000 barrels. To place these sizes in a rough perspective to the type of accident usually involved, spills in the largest category are usually associated with catastrophes such as large blowouts or shipwrecks. Accidents in the second category typically include these and other serious events, such as structural failures and collisions. Most accidents in the smallest size category involve occurrences such as valve failures and storage tank leaks.

The choice of which size range to use depends upon the analysis being performed. If, for example, a particular impact could occur only from a massive oil slick, then only large spills should be examined. Accident rates for platforms on the U.S. OCS were derived from USGS accident files (USGS, 1979), and from USGS production records (USGS, 1980). For spills 1,000 barrels or larger, the period from 1964 to 1979 was used. In 1970, reporting procedures were revised to improve the reliability of data for smaller spills, so the period from 1970 to 1979 was used for spills between 50 to 1,000 barrels. Between 1964 and 1979, there were 4 spills 10,000 barrels or larger, and 9 spills (including the 4) 1,000 barrels or larger. During this period, U.S. oil production was 4.386 billion barrels. There were 27 spills of 50 to 1,000 barrels between 1970 and 1979, when 3.205 billion barrels of oil were produced on the OCS. USGS accident files are also a major source of data for pipeline accidents. As with platforms, the period from 1964 to 1979 was used for spills of 1,000 barrels or larger, and 1970 to 1979 for spills between 50 and 1,000 barrels. USGS files (1979) include 2 spills over 10,000 barrels and 7 spills (including the 2) over 1,000 barrels. Devanney and Stewart (1976) report 5 additional pipeline spills, but all except 1 (of 1,020 barrels) occurred in coastal channels. Adding this one spill to the USGS data gives a total of 8 spills 1,000 barrels or larger. From 1970 to 1979, the USGS files (1979) report 11 spills between 50 and 1,000 barrels.

Since nearly all U.S. OCS production has been transported to shore by pipelines, the same production statistics used for platforms can be applied to the pipeline accident data. Accident data and oil transportation data for tankers is not maintained by the USGS, so tanker accident rates must be derived from published literature. The tanker accident rate for spills of 1,000 barrels or larger, used in recent oil spill trajectory models, is from Stewart (1976): 178 spills in 45.941 billion barrels of oil transported. There is no detailed listing of these spills in the published literature. However, Devanney and Stewart (1974), examining tanker spills on major trade routes, reported 99 spills greater than 42,000 gallons (1,000 barrels), 87 spills greater than 100,000 gallons, and 32 spills greater than 1,000,000 gallons.

Interpolation of this data gives about 53 spills greater than 10,000 barrels, or about 54 percent of the 1,000 barrel spill rate. This estimate can be partially confirmed by listings of spills in Oil Spill Intelligence Report (1978 and 1979) where out of 22 spills of crude oil from bulk carriers, reported for 1978 and 1979, and known or estimated to be larger than 1,000 barrels, 15, or 68 percent, were larger than 10,000 barrels. Therefore, a factor of 60 percent of the 1,000 barrel rate appears reasonable, giving an estimated spill rate for 10,000 barrel and larger spills of 107 per 45.941 million barrels. Published data for tanker accidents does not permit an estimate to be made for tanker spills of 50 to 1,000 barrels, since reported rates typically include accidents in port and other events which are not covered in this analysis. A comparison with platform and pipeline rates suggests a rate in the range of 10 to 20 spills per billion barrels, but this was not considered sufficiently accurate to use in the calculations which follow. In summary, the spill rates used in this report are:

	Spills per billion barrels		
	50-1,000 bbl	1,000+ bbl	10,000+ bbl
Platforms	8.42	2.05	0.91
Pipelines	3.43	1.82	0.46
Tankers	n/a	3.87	2.32

Spill frequency estimates were calculated for production and transportation of oil imported from other areas by tankers within the study area. The assumption was made that only one-half the spills from tanker transportation of imported oil occur within the study area and that the other half of the spills occur outside the study area.

Oil Spill Model Results. The overall spill predictions based on the preceding information are as follows:

	EXPECTED NUMBER OF SPILLS (Mean)		MOST LIKELY NO. OF SPILLS (Mode)		PROBABILITY OF ONE OR MORE SPILLS	
	>1,000	>10,000	>1,000	>10,000	>1,000	>10,000
Existing leases plus imports	22.3 ¹	11.5 ²	22	11	0.99+	0.99+
Sale No. 68	1.1 ³	0.5 ³	1	0	0.67	0.39
Sale No. 68 plus existing leases and imports	23.2	11.8	23	11	0.99+	0.99+

¹ Approximately 7.8 oil spills from existing OCS production and transportation, and 14.5 oil spills from import tankering.

² Approximately 2.8 oil spills from existing OCS production and transportation, and 8.7 oil spills from import tankering.

³ The following expected numbers of spills are presented as a second opinion: .43 >1,000, 0.14 >10,000; no spill occurrence: 65% >1,000, 87% >10,000, and 93/99% >1 spill (Schlueter R. 1981).

The oil spill model results should be considered estimates only. Due to the uncertainty of estimating oil and gas resources and the uncertainty of predicting oil spills, the actual number of oil spills which may occur, could be higher or lower. If oil from the Santa Barbara Channel is barged to the Los Angeles basin for refining, or if oil from this subarea is piped to shore then barged to Los Angeles, the estimated number of oil spills is not significantly different than given above.

A more detailed breakdown showing projected oil spill impacts on the shoreline segments is shown in Tables IV.A.1.a-1 and IV.A.1.a-2. A detailed breakdown showing projected oil spill impacts on the targets is shown in Tables IV.A.1.a-3 and IV.A.1.a-4.

Conclusions. There is an existing high probability of an oil spill impacting Southern California resources due to the high level of imported oil required to support existing refineries. This includes some existing offshore activity due to previous leases and wells within the State of California 3-mile boundary. The oil spill model indicates that Proposed Sale No. 68 could represent a 4 percent increase in spill potential; that is, increase the most likely number of spills from 22 to 23.

b. Cleanup and Containment: The prevention and mitigation of oil spills has historically been a prime consideration in OCS resource management. Prevention and mitigation measures are identified and required by OCS Order Nos. 2, 5, 7, and 8. These requirements include oil spill contingency plans and personnel training procedures, as approved by the USGS, and the maintenance of containment booms and other spill mitigating equipment at each OCS drilling and production site. These requirements could be increased if special circumstance required it, however it has not been judged necessary so far with the backup capability of the cleanup cooperatives nearby. There are three principal oil spill cooperatives in the Southern California area. These are Clean Coastal Waters and Southern California-Petroleum Contingency Organization (SC-PCO), both in Long Beach, and Clean Seas, in Santa Barbara. Each of these cooperatives has also deployed equipment at various strategic locations for quicker response times. There are currently over 37 different oil

spill skimmers and 25 miles of boom (see Appendix H for a listing of the co-ops equipment). This is in addition to the equipment on-site at the off-shore locations. If this equipment proves inadequate, each co-op can quickly bring in additional equipment from various manufacturers and other locations around the country. The Coast Guard, who would be called immediately in the case of any sizable spill, maintains the Coast Guard skimming barrier near San Francisco. This is a heavy-duty oil absorbing booming device, representing the state-of-the-art, and could be deployed in Southern California within a reasonable amount of time. Assessing the effectiveness of a clean-up is very difficult because no major spill has occurred in Southern California since the 1969 Santa Barbara spill. Improvements in oil spill equipment technology and availability have been tremendous since then. There is presently more oil spill equipment available along the Southern California coast than could be readily used in the case of a major spill. It would appear that the oceanographic and meteorological conditions, neither of which can be predicted in advance, would be the limiting factor during a clean-up.

It appears that the present on-site equipment and that available from the oil spill cooperatives and the Coast Guard could substantially contain major oil spills in most of the weather conditions found in the Southern California Bight. New equipment is constantly being evaluated by the oil companies and the cooperatives and purchased if they feel that it will enhance recovery-ability. The California Coastal Commission is presently conducting a study of the oil spill containment and clean-up ability of the cooperatives. A final report is expected by January, 1982.

The type of oil makes a difference in its characteristics and there is a wide variety of types in even the Southern California offshore oils. Past experience and current data indicate that on the average, within the first 12 to 24 hours, 50 percent of any crude oil spilled on the ocean will have disappeared either through evaporation or dissolving in the water column and possibly sinking. If mechanical recovery is not possible or feasible, several dispersants are currently available. They are stockpiled and can be authorized for use by EPA.

The wide variety of cleanup equipment available, oil types, weather conditions, location and amount of oil that could be released make generalized discussions of oil spill containment and cleanup difficult. For this reason, any discussion of effects or impacts are made in association with the particular resource that might be impacted. If a Sale is authorized and drilling proceeds, a detailed contingency plan of response measures and mitigation will be required before any drilling takes place.

TABLE IV.A.1.a-1

PROBABILITIES (EXPRESSED IN PERCENT CHANCE) OF ONE OR MORE SPILLS, THE MOST LIKELY NUMBER OF SPILLS, AND THE EXPECTED NUMBER OF SPILLS OCCURRING AND CONTACTING LAND SEGMENTS OVER THE PRODUCTION LIFE OF THE LEASE AREA, SPILLS 1000 BARRELS AND LARGER

Land Segment	----- Within 3 days -----						----- Within 10 days -----						----- Within 30 days -----					
	Proposed			Existing and Proposed			Proposed			Existing and Proposed			Proposed			Existing and Proposed		
	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean
21	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0
22	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	2	0	0.0
23	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0
24	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	n	0	0.0	7	0	0.1
25	n	0	0.0	n	0	0.0	n	0	0.0	3	0	0.0	n	0	0.0	7	0	0.1
26	n	0	0.0	9	0	0.1	n	0	0.0	15	0	0.2	n	0	0.0	21	0	0.2
27	n	0	0.0	7	0	0.1	n	0	0.0	10	0	0.1	n	0	0.0	12	0	0.1
28	n	0	0.0	7	0	0.1	n	0	0.0	16	0	0.2	n	0	0.0	19	0	0.2
29	n	0	0.0	3	0	0.0	n	0	0.0	7	0	0.1	n	0	0.0	8	0	0.1
30	1	0	0.0	42	0	0.5	3	0	0.0	58	0	0.9	4	0	0.0	61	0	0.9
31	3	0	0.0	27	0	0.3	4	0	0.0	39	0	0.5	5	0	0.0	43	0	0.6
32	n	0	0.0	1	0	0.0	n	0	0.0	4	0	0.0	1	0	0.0	5	0	0.1
33	n	0	0.0	2	0	0.0	1	0	0.0	4	0	0.0	1	0	0.0	6	0	0.1
34	1	0	0.0	3	0	0.0	1	0	0.0	7	0	0.1	1	0	0.0	11	0	0.1
35	2	0	0.0	91	2	2.5	2	0	0.0	92	2	2.5	2	0	0.0	92	2	2.5
36	2	0	0.0	6	0	0.1	3	0	0.0	10	0	0.1	3	0	0.0	11	0	0.1
37	1	0	0.0	1	0	0.0	3	0	0.0	13	0	0.1	3	0	0.0	15	0	0.2
38	n	0	0.0	n	0	0.0	3	0	0.0	16	0	0.2	4	0	0.0	22	0	0.3
39	n	0	0.0	n	0	0.0	1	0	0.0	6	0	0.1	2	0	0.0	13	0	0.1
40	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	2	0	0.0	9	0	0.1
41	n	0	0.0	17	0	0.2	1	0	0.0	36	0	0.4	1	0	0.0	41	0	0.5
42	n	0	0.0	2	0	0.0	n	0	0.0	4	0	0.0	n	0	0.0	6	0	0.1

Note: n = less than 0.5 percent; ** = greater than 99.5 percent. Segments with less than a 0.5 percent probability of one or more contacts within 30 days are not shown.

TABLE IV.A.1.a-1 (Cont.)

Land Segment	----- Within 3 days -----						----- Within 10 days -----						----- Within 30 days -----					
	Proposed			Existing and Proposed			Proposed			Existing and Proposed			Proposed			Existing and Proposed		
	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean
43	n	0	0.0	16	0	0.2	1	0	0.0	34	0	0.4	2	0	0.0	41	0	0.5
44	n	0	0.0	n	0	0.0	1	0	0.0	4	0	0.0	1	0	0.0	8	0	0.1
45	2	0	0.0	45	0	0.6	4	0	0.0	70	1	1.2	5	0	0.1	75	1	1.4
46	n	0	0.0	n	0	0.0	n	0	0.0	4	0	0.0	1	0	0.0	6	0	0.1
47	2	0	0.0	35	0	0.4	4	0	0.0	52	0	0.7	5	0	0.0	56	0	0.8
48	n	0	0.0	n	0	0.0	1	0	0.0	3	0	0.0	2	0	0.0	13	0	0.1
49	n	0	0.0	1	0	0.0	2	0	0.0	3	0	0.0	3	0	0.0	14	0	0.2
50	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	4	0	0.0
51	1	0	0.0	1	0	0.0	2	0	0.0	6	0	0.1	4	0	0.0	14	0	0.2
52	4	0	0.0	17	0	0.2	8	0	0.1	36	0	0.4	10	0	0.1	42	0	0.5
53	1	0	0.0	1	0	0.0	2	0	0.0	4	0	0.0	3	0	0.0	8	0	0.1
54	n	0	0.0	n	0	0.0	2	0	0.0	3	0	0.0	3	0	0.0	7	0	0.1
55	1	0	0.0	1	0	0.0	3	0	0.0	3	0	0.0	5	0	0.1	15	0	0.2
56	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	4	0	0.0	15	0	0.2

Note: n = less than 0.5 percent; ** = greater than 99.5 percent. Segments with less than a 0.5 percent probability of one or more contacts within 30 days are not shown.

TABLE IV.A.1.a-2

PROBABILITIES (EXPRESSED IN PERCENT CHANCE) OF ONE OR MORE SPILLS, THE MOST LIKELY NUMBER OF SPILLS, AND THE EXPECTED NUMBER OF SPILLS OCCURRING AND CONTACTING LAND SEGMENTS OVER THE PRODUCTION LIFE OF THE LEASE AREA, SPILLS 10,000 BARRELS AND LARGER

Land Segment	----- Within 3 days -----						----- Within 10 days -----						----- Within 30 days -----					
	Proposed			Existing and Proposed			Proposed			Existing and Proposed			Proposed			Existing and Proposed		
	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean
22	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0
24	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	3	0	0.0
25	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	n	0	0.0	3	0	0.0
26	n	0	0.0	3	0	0.0	n	0	0.0	5	0	0.0	n	0	0.0	8	0	0.1
27	n	0	0.0	2	0	0.0	n	0	0.0	3	0	0.0	n	0	0.0	4	0	0.0
28	n	0	0.0	3	0	0.0	n	0	0.0	8	0	0.1	n	0	0.0	9	0	0.1
29	n	0	0.0	1	0	0.0	n	0	0.0	3	0	0.0	n	0	0.0	3	0	0.0
30	1	0	0.0	18	0	0.2	1	0	0.0	29	0	0.3	1	0	0.0	31	0	0.4
31	1	0	0.0	11	0	0.1	1	0	0.0	17	0	0.2	2	0	0.0	20	0	0.2
32	n	0	0.0	1	0	0.0	n	0	0.0	2	0	0.0	n	0	0.0	3	0	0.0
33	n	0	0.0	1	0	0.0	n	0	0.0	2	0	0.0	n	0	0.0	3	0	0.0
34	n	0	0.0	1	0	0.0	n	0	0.0	4	0	0.0	1	0	0.0	6	0	0.1
35	1	0	0.0	58	0	0.9	1	0	0.0	59	0	0.9	1	0	0.0	59	0	0.9
36	1	0	0.0	2	0	0.0	1	0	0.0	5	0	0.0	1	0	0.0	5	0	0.0
37	n	0	0.0	n	0	0.0	1	0	0.0	6	0	0.1	1	0	0.0	7	0	0.1
38	n	0	0.0	n	0	0.0	1	0	0.0	8	0	0.1	2	0	0.0	12	0	0.1
39	n	0	0.0	n	0	0.0	n	0	0.0	3	0	0.0	1	0	0.0	7	0	0.1
40	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	5	0	0.0
41	n	0	0.0	9	0	0.1	n	0	0.0	19	0	0.2	n	0	0.0	22	0	0.3
42	n	0	0.0	1	0	0.0	n	0	0.0	2	0	0.0	n	0	0.0	3	0	0.0
43	n	0	0.0	9	0	0.1	n	0	0.0	19	0	0.2	1	0	0.0	23	0	0.3
44	n	0	0.0	n	0	0.0	n	0	0.0	3	0	0.0	1	0	0.0	4	0	0.0

Note: n = less than 0.5 percent; ** = greater than 99.5 percent. Segments with less than a 0.5 percent probability of one or more contacts within 30 days are not shown.

TABLE IV.A.1.a-2 (Cont.)

Land Segment	----- Within 3 days -----						----- Within 10 days -----						----- Within 30 days -----					
	Proposed			Existing and Proposed			Proposed			Existing and Proposed			Proposed			Existing and Proposed		
	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean
45	1	0	0.0	27	0	0.3	2	0	0.0	44	0	0.6	2	0	0.0	49	0	0.7
46	n	0	0.0	n	0	0.0	n	0	0.0	2	0	0.0	n	0	0.0	3	0	0.0
47	1	0	0.0	20	0	0.2	1	0	0.0	31	0	0.4	2	0	0.0	34	0	0.4
48	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	1	0	0.0	7	0	0.1
49	n	0	0.0	n	0	0.0	1	0	0.0	1	0	0.0	2	0	0.0	8	0	0.1
50	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	2	0	0.0
51	n	0	0.0	n	0	0.0	1	0	0.0	3	0	0.0	2	0	0.0	8	0	0.1
52	3	0	0.0	10	0	0.1	4	0	0.0	22	0	0.2	5	0	0.1	25	0	0.3
53	1	0	0.0	1	0	0.0	1	0	0.0	3	0	0.0	2	0	0.0	4	0	0.0
54	n	0	0.0	n	0	0.0	1	0	0.0	1	0	0.0	2	0	0.0	4	0	0.0
55	n	0	0.0	n	0	0.0	2	0	0.0	2	0	0.0	3	0	0.0	8	0	0.1
56	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0	2	0	0.0	8	0	0.1

Note: n = less than 0.5 percent; ** = greater than 99.5 percent. Segments with less than a 0.5 percent probability of one or more contacts within 30 days are not shown.

TABLE IV.A.1.a-3

PROBABILITIES (EXPRESSED IN PERCENT CHANCE) OF ONE OR MORE SPILLS, THE MOST LIKELY NUMBER OF SPILLS, AND THE EXPECTED NUMBER OF SPILLS OCCURRING AND CONTACTING TARGET OVER THE PRODUCTION LIFE OF THE LEASE AREA, SPILLS 1000 BARRELS AND LARGER

Target	----- Within 3 days -----						----- Within 10 days -----						----- Within 30 days -----					
	Proposed			Existing and Proposed			Proposed			Existing and Proposed			Proposed			Existing and Proposed		
	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean
Farallon Islands	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0
San Francisco	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0
Anacapa Island	4	0	0.0	65	1	1.1	7	0	0.1	75	1	1.4	8	0	0.1	78	1	1.5
Point Loma	n	0	0.0	n	0	0.0	1	0	0.0	4	0	0.0	3	0	0.0	13	0	0.1
Dana Point	1	0	0.0	4	0	0.0	2	0	0.0	9	0	0.1	2	0	0.0	10	0	0.1
Long Beach	5	0	0.1	93	2	2.7	5	0	0.1	93	2	2.7	5	0	0.1	93	2	2.7
Tanner Bank	4	0	0.0	4	0	0.0	5	0	0.1	7	0	0.1	7	0	0.1	35	0	0.4
Cortez Bank	1	0	0.0	1	0	0.0	1	0	0.0	5	0	0.1	3	0	0.0	43	0	0.6

Note: n = less than 0.5 percent; ** = greater than 99.5 percent.

TABLE IV.A.1.a-4

PROBABILITIES (EXPRESSED IN PERCENT CHANCE) OF ONE OR MORE SPILLS, THE
 MOST LIKELY NUMBER OF SPILLS, AND THE EXPECTED NUMBER OF SPILLS
 OCCURRING AND CONNG TARGETS OVER THE PRODUCTION LIFE OF
 THE LEASE AREA, SPILLS 10,000 BARRELS OR LARGER

Target	----- Within 3 days -----						----- Within 10 days -----						----- Within 30 days -----					
	Proposed			Existing and Proposed			Proposed			Existing and Proposed			Proposed			Existing and Proposed		
	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean	Prob	Mode	Mean
Farallon Islands	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	1	0	0.0
San Francisco	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0	n	0	0.0
Anacapa Island	1	0	0.0	42	0	0.6	3	0	0.0	51	0	0.7	3	0	0.0	54	0	0.8
Point Loma	n	0	0.0	n	0	0.0	n	0	0.0	2	0	0.0	1	0	0.0	7	0	0.1
Dana Point	n	0	0.0	2	0	0.0	1	0	0.0	4	0	0.0	1	0	0.0	4	0	0.0
Long Beach	2	0	0.0	63	0	1.0	2	0	0.0	63	0	1.0	2	0	0.0	63	1	1.0
Tanner Bank	2	0	0.0	3	0	0.0	3	0	0.0	4	0	0.0	4	0	0.0	19	0	0.2
Cortez Bank	n	0	0.0	n	0	0.0	1	0	0.0	3	0	0.0	1	0	0.0	25	0	0.3

Note: n = less than 0.5 percent; ** = greater than 99.5 percent.

c. Effects on Marine Life: Petroleum hydrocarbons may have short-term acute lethal and long-term chronic sublethal effects on marine organisms. The short-term, acute effects are those usually associated with accidental oil spills while the long-term chronic effects which are less investigated, are expected to be more closely linked with the natural phenomenon of oil seeps, the slow dissolution of sediment trapped oil spill residues or large volume municipal-industrial effluent discharges. The acute effects are generally measured in the laboratory by 96-hour (or shorter) bioassays. A large volume of literature exists concerning these experiments and effects, usually death, have been recorded for a wide variety of marine organisms from unicellular algae to vertebrates exposed to both crude petroleum hydrocarbons and refined components. Results of these short-term studies must be interpreted with some caution when attempting to predict the effects on marine organisms outside the laboratory environment. Many factors such as temperature, wave conditions, sediment adsorption, etc., affect the behavior of oil spilled in the ocean. These combine with biological factors such as age, reproductive maturity and physiological stress from nonpetroleum pollutants and affect individual organisms' response to petroleum in the natural environment. The literature dealing with the long-term sublethal chronic effects on marine organisms is much less voluminous. The problems associated with maintaining organisms in long-term laboratory bioassays and monitoring a wide spectrum of possible effects other than death have kept the amount of information from which to predict long-term natural effects sparse. These long-term sublethal effects of chronic exposure to low levels of petroleum hydrocarbons are less dramatic than the death response to short-term, high-doses. However, in relation to population dynamics, and possibly the evolution of marine life, these effects may prove to be much more important. The reader should keep these caveats in mind when reading the effects given below. The responses of marine organisms to oil are discussed by group and no attempt has been made to cite all the effects literature for any one group. Acute toxicities are given in Table IV.A.1.c-1, modified from Craddock (1977).

Bacteria. Some motile bacteria, important in utilizing dead organic material and recycling nutrients, have been shown to respond to petroleum by reduced or blocked chemoreception. Mitchell, Fogel and Chet (1972) found bacterial response to chemical attractants was reversibly inhibited by 6,000 ppm phenol, toluene or Kuwait crude oil. Motility was not inhibited but was random. Walsh and Mitchell (1973) reported that Pseudomonas sp. was inhibited 50 percent in chemotactic response by Kuwait crude (10 ppm), kerosene (12 ppm), benzene (0.1 ppm) and phenol (120 ppm). Behavioral effects such as the above could cause a reduction in nutrient recycling and the ability of the ocean to purify itself without being reflected in bacterial plate counts used as routine monitoring tools.

Algae. Reduced CO₂ exchange rates and a toxic effect on photosynthesis in Fucus vesiculosus, Laminaria digitata, Porphyra umbilicalis and Enteromorpha sp. were found after submerged fronds were coated with thin films of crude oil (Schramm, 1972). Clendenning and North (1959) demonstrated 50 percent reduction in photosynthesis in fronds of Macrocystis pyrifera exposed to cresols and phenols (5-10 ppm) and dispersed diesel oil (10-100 ppm) for 4 days. Fronds

TABLE IV.A.1.c-1

ACUTE TOXICITY OF PETROLEUM TO SELECTED
MARINE ORGANISMS

<u>Organism</u>	<u>Petroleum Tested</u>	<u>Test Parameter</u>	<u>Concentration (ppm)</u>
Coelenterata <u>Tubularia</u> <u>crocea</u>	Crude Oil WSF	Static Bioassay 24 hr.	5,000 LC ₅₀
Echinodermata <u>Pisaster ochraceus</u> (larval starfish)	No. 2 diesel fuel	Static Bioassay Gastrula stage 12 hr. avg. survival	5,000 ppm
<u>Dendraster excentricus</u> (larval sand dollar)	No. 2 diesel fuel	Static Bioassay Pluteus stage 21 hr. avg. survival	5,000 ppm
Mollusca Pacific Oyster <u>Crassostrea gigas</u>	Prudhoe Bay Crude	Static Bioassay 48 hr.	523 ppm
Mussel, Bay <u>Mytilus edulis</u>	Outboard motor effluent	Constant flow 24 hr.	1×10^5 ppm
Periwinkle <u>Littorina littorea</u>	Aramco Crude Oil	Simulated Tidal Cycle TD ₅₀ 10 hr.	1.1×10^5
Limpet <u>Acmaea (Notoacmaea)</u> <u>scutum</u>	No. 2 diesel WSF	Static 48 hr.	22.1 (cal- culated)
Mussel <u>Mytilus californianus</u>	Santa Barbara Crude	Static 48 hr.	10,000

TABLE IV.A.1.c-1 (Cont.)

<u>Organism</u>	<u>Petroleum Tested</u>	<u>Test Parameter</u>	<u>Concentration (ppm)</u>
Annelida			
<u>Neanthes arenaceodentata</u>	No. 2 fuel oil	Static 96 hr.	2.7
	Bunker C	96 hr.	3.6
	S. Louisiana	96 hr.	12.5
	Kuwait Crude	96 hr.	>10.4
<u>Capitella capitata</u>	No. 2 fuel oil	Static 96 hr.	2.3
	Bunker C	96 hr.	0.9
	S. Louisiana	96 hr.	12.0
	Kuwait Crude	96 hr.	>9.8
Arthropoda			
American Lobster <u>Homarus americanus</u>	Venezuelan Crude	Static 96 hr.	2-30
Dungeness Crab <u>Cancer magister</u>	No. 2 fuel oil	Flow through 96 hr.	4,778 ± 1,071 ppm
Kelp Crab <u>Pugettia producta</u> (larva)	No. 2 fuel	Static 96 hr.	10
	Kuwait Crude	96 hr.	500
	S. Louisiana	96 hr.	450
Anyphipod <u>Orchestia traskiana</u>	No. 2 fuel whole oil	12.2°C exposed in dish	LT ₅₀ 152 min.
Shrimp <u>Pandalus danae</u>	Prudhoe Bay Crude WSF	Static 24 hr.	~4
	S. Louisiana Crude Oil	24 hr.	~2

TABLE IV.A.1.c-1 (Cont.)

<u>Organism</u>	<u>Petroleum Tested</u>	<u>Test Parameter</u>	<u>Concentration (ppm)</u>
Grass Shrimp <u>Palaemonetes pugio</u>	S. Louisiana Crude WSF	Static 48 hr.	<16.8
	Kuwait	48 hr.	<10.2
	No. 2 fuel	48 hr.	5.5
	Bunker C	48 hr.	3.43
Shore Crab <u>Hemigrapsus nudus</u>	No. 2 fuel 0.7 14°C	Static Whole Oil	LT ₅₀ 812 min.
Barnacle <u>Balanus crenatus</u>	Norman Wells Crude Oil	Static Bioassay 96 hr.	30-1,000 ppm
Vertebrates Shiner Perch <u>Cymatogaster aggregata</u>	No. 2 fuel	Flow through Bioassay 96 hr.	550 ± 80
	Kuwait Crude	96 hr. flow through	1,300 ± 260
Staghorn Sculpin <u>Leptocottus armatus</u>	Kuwait Crude	96 hr. flow through	5,600 ± 1400
Pacific Herring <u>Clupea pallasii</u>	No. 2 fuel	96 hr. flow through	20
Starry Flounder <u>Platichthys stellatus</u>	S. Louisiana Crude Oil	72 hr. flow through	1,400 ± 110
Sand Sole <u>Psettichthys melanostichus</u>	S. Louisiana Crude Oil	Static 6 day	10 ppm (100% mortality)
	No. 2 fuel	Static 4 day	50 ppm (20% mortality)
	Kuwait Crude	Static 5 day	10 ppm (50% mortality)

exposed to 10 ppm of benzene, toluene and n-hexane showed slight reductions in photosynthesis in benzene and 75 percent reduction in toluene-treated plants. The latter displayed "visible injuries." Experimental conditions described above provide some indication of what one might expect in short-term accidental spills where hydrocarbon concentrations might reach the levels tested. Lower concentrations similar to what might be expected in chronic oil seep areas, have been shown to actually enhance photosynthetic rates in one species of Costaria (0.007 ppm crude oil; Shiels, Goering and Hood, 1973).

Behavioral effects of water soluble fractions of light petroleum fractions (1:25 to 1:110) have been demonstrated in Fucus serratus and F. vesiculosus (Cook and Elvidge, 1951). These light petroleum fractions attracted Fucus sperm in a manner similar to the chemical attractants excreted from Fucus eggs.

Steele (1977) has shown that Fucus edentatus zygotes exposed to No. 2 fuel oil in concentrations as low as 0.2 ppb failed to grow or germinate if the exposure was made prior to gamete release and fertilization. Growth was reduced by approximately one-half in zygotes exposed to 20 ppb No. 2 fuel oil or 200 ppm crude oil after gamete release and fertilization. Low levels of petroleum hydrocarbons may stimulate growth in some photoplankton (Galtsoff et al., 1935; Prouse, Gordon and Keizer, 1976). These latter authors suggest that growth of phytoplankton can be stimulated by petroleum at levels less than 0.1 ppm and inhibited at levels above that. It is clear from these and other experiments that the growth response depends upon the species of algae (different species in the same genus may exhibit different tolerances and/or responses at the same levels of petroleum) and the types of hydrocarbons (low and high boiling fractions of crude may affect algae differently). Finally, Boney (1974) found that some aromatics, including 3, 4 benzpyrene, a known carcinogen, caused "cancerous" growths in Antithamnion plumula at 0.3 to 3 ppm.

Coelenterates. Many corals have shown reduced feeding behavior and reduced tentacular contraction activity when exposed to crude oil (Lewis, 1971; Reimer, 1975a) and the internal symbiotic zooxanthellae of some corals may be extruded by exposure to oil (Reimer, 1975b; Birkelund, Reimer and Young, 1976). The anemone, Anthopleura elegantissima, found commonly in the California intertidal zone, retained its chemoreceptive alarm behavior when exposed to 0.1 to 0.2 ppm water-soluble fraction of Prudhoe Bay crude oil. During the two-week test, experimental animals attempted to withdraw from the test chambers while control animals did not (Hanson, NOAA, NMFS, Northwest and Alaska Fisheries Center, Seattle, Washington, unpublished results). Birkelund, Reimer and Young (1976) recorded reduced growth over a 61-day period in the coral Porites furcata after exposure for 1 and 2½ hours to Bunker C fuel oil.

Annelids. Some species of adult polychaetes seem quite resistant to oil in their environments while showing relatively high sensitivity to oil in acute exposure bioassays. Capitella capitata has been found in abundance in petroleum-affected sediments while showing sensitivity in laboratory exposures to water-soluble fractions of crude oil in the low ppm range (George, 1971; Rossi, Anderson and Ward, 1976). Chia (1973) observed loss of movement and sinking of trochophore larvae of Nereis brandti and Serpula vermicularis exposed to No. 2 diesel oil.

Carr and Reish (1977) found that narcosis usually preceded death in five species of annelids exposed chronically to No. 2 fuel oil and South Louisiana crude oil.

Studies of the cirratulid polychaetes, Cirriiformia tentaculata and Cirratulus cirratus, species common in California rocky intertidal habitats, demonstrated that the field populations were relatively unaffected by oiled sediments as measured by spawning, growth and mortality (George, 1971). Akesson (1975), however, noted growth reductions up to 85 percent of normal in bioassays of the eunicid polychaete Ophryotrocha labronica and Carr and Reish (1977) noted decreases in the number of offspring in that species and in Ctenodrilus serratus at low (1.3 ppm No. 2 fuel oil) hydrocarbon concentrations.

Arthropods. The effects of petroleum on arthropods have been reported in a large number of research papers. In addition to the various factors affecting the response of other groups of marine invertebrates, the arthropods have an added confounding factor. The phenomenon of molting may change the rates of uptake and tolerance to hydrocarbons depending on whether the animals are pre, post or in the midst of molting and may itself be influenced by the exposure to petroleum. Serious consequences to the life history of the animal may occur since the molting stage is considered a very vulnerable stage in the life cycle.

The physiological effects of petroleum hydrocarbon on crustacea are documented in a number of species, but are unpredictable, (Anderson, Neff and Petrocelli, 1974; Anderson, 1975; Tatem, 1976; Rice et al., 1976). Osmoregulation, the control of body fluids and salts, may be disrupted by the water-soluble fraction of crude oil (Anderson, Neff and Petrocelli, 1974). Karinen and Rice (1974) found that Tanner crabs exposed to Prudhoe Bay crude oil autotomized (lost) their limbs shortly after or during molting.

Narcotic effects have been noted for arthropods in general. Crisp, Christie and Ghobashy (1967) found reduced cirral activity in barnacle larvae exposed to petroleum hydrocarbons. Narcosis has been shown in planktonic larval lobsters exposed to 0.1 ppm water-soluble fraction of crude oil (Donahue et al., 1977), in larval spot shrimp and Dungeness crab (Sanborn and Malins, 1977) at 8 to 12 ppb naphthalene, and grass shrimp (Tatem, 1976). Phototactic behavior was significantly changed in larvae of the rock crab, Cancer irroratus when exposed to No. 2 fuel oil (Bigford, 1977) at concentrations of 1.0 and 0.1 ppm. Ingestion of oil has been documented by Conover (1971) for planktonic copepods in Chedabucto Bay following the spill from the tanker Arrow and by Blackman (1972) for laboratory brown shrimp Crangon crangon. Blumer et al., (1973) found that chemoreception-mediated behavior was disrupted in the American lobster exposed to oil but could not detect any morphological changes in the odor receptors. Minichev and Brown (1979) found eye lesions in the brown shrimp Penaeus aztecus and suggested a link to sediment-bound residual crude oil.

Marine arthropods exhibit such diverse growth responses to petroleum hydrocarbon that generalizations are impossible. Growth was not affected by No. 2 fuel

oil in the brown shrimp but significantly reduced growth in grass shrimp (Cox and Anderson, 1973). Reproduction, as measured by hatching rate, has been shown to be reduced in grass shrimp exposed to No. 2 fuel oil for 72 hours (Tatem, 1976). Straughan (1971), on the other hand, found no indications of breeding effects by oil in two high-intertidal sessile barnacles, Balanus glandula and Chthamalus fissus, while Pollicipes polymerus was affected by oil in the intertidal. The settlement of larvae of the above species was apparently retarded on oiled substrates.

Molluscs. Behavioral effects of exposure to petroleum hydrocarbons have been investigated in gastropods where narcotization seems to be a general response. Specific effects include inability to maintain attachment to the substrate by the limpet Patella vulgata (Dicks, 1973), loss of response to tactile stimulation in the snail Thais lamellosa (Ehrt, et al., 1972), increased crawling rate in the snail Littorina littorea (Hargrave and Newcombe, 1973) and loss of chemoreception ability in the snails Nassarius obsoletus (Jacobson and Boylan, 1973) and Urosalpinx cinerea (Blake, 1960). Impairment of byssal thread production in the mussel Mytilus edulis was noted in animals exposed to less than 350 ppm crude oil (Swedmark, Granmo and Kollberg, 1973). Reductions in metabolism due to oil (Gilfillan, 1975) in Mytilus edulis may affect subsequent spawning success as also indicated by reduced breeding in Mytilus californianus following the Santa Barbara oil spill in 1969 (Straughan, 1971).

Growth of bivalve molluscs may be affected by the presence of crude oil, but it appears to occur only at high concentrations of hydrocarbons. Anderson (1975) found no indication of reduction of growth after 105 days in the oyster Crassostrea virginica exposed to 1 percent oil-seawater dispersion for 96 hours. In field studies, growth was found to be reduced near oil field bleed-water discharge in oysters less than 150 feet from the discharge point. The clam Mya arenaria experienced reduced growth in intertidal sediments contaminated with oil as compared to adjacent uncontaminated sediments (Dow, 1975). Abnormal development of oyster larvae was observed by Legore (1974) in Crassostrea gigas at 1,000 ppm Alaskan crude oil. Threshold doses for inducement of abnormalities by benzene, toluene and xylenes were 3.1 to 3.6 ppm. Renzoni (1973, 1975) demonstrated that bivalve sperm and fertilization could be adversely affected by water-soluble fractions of various crude oils in 1 to 1,000 ppm concentrations.

Echinoderms. Very little work has been done on the effects of petroleum hydrocarbons on echinoderms. Whittle and Blumer (1970) have demonstrated that oil can reduce chemoreceptive-based feeding behavior in the starfish Asterias vulgaris. Crude oil has also been shown to produce developmental abnormalities in sea urchins, although there appears to be no significant reduction in fertilization success (Lonning and Hagstrom, 1975).

Vertebrates-Fish. Fish exposed to petroleum hydrocarbons exhibit two types of behavioral responses: an avoidance reaction and a cough reaction. Several marine species showed avoidance reactions to crude oil at 0.7 ppm (Syazuki, 1964). Larvae of some species (Atlantic cod, Atlantic herring and plaice) did not seem able to avoid oil-contaminated water (Kuhnhold, 1970). The cough

response which probably indicates an irritation reaction to petroleum hydrocarbons has been found in salmon fry exposed to the water-soluble fraction of Prudhoe Bay crude oil, Cook Inlet crude oil and No. 2 fuel oil (Rice, Thomas and Short, 1977) at 0.35 to 2.22 ppm. The reaction seems to be temporary and probably correlated with the levels of aromatic compounds in the water which decrease with time.

Larvae of the winter flounder have shown narcotization response to Bunker C fuel (1,000 ppm) when exposed for 42 hours (James, 1926). Struhsaker et al. (1974) has reported that larvae of the Pacific herring exposed to 6.7 and 12.1 ppm benzene for 48 hours showed reduced levels of feeding and swimming which returned to normal in about five days.

Reproductive effects have been reported by Kuhnhold (1970) for the Atlantic cod. Eggs exposed to the water-soluble fraction of crude oils from Libya, Iran or Venezuela at concentrations of 10 ppm or less for 100 hours, then placed in clean seawater, showed increased mortality of eggs to the hatching stage with increasing concentration of oil. In addition, most of the larvae which survived were deformed. Similar results were observed in the Pacific herring and Northern anchovy at concentrations of 30 to 45 ppm benzene (Struhsaker, et al. 1974). Smith and Cameron (1979) have demonstrated hatching failure in Pacific herring for water-soluble fractions of Prudhoe Bay crude oil at 1.0 ppm with accompanying morphological abnormalities in the embryos. Larvae of the herring exposed to ^{14}C -benzene accumulated this aromatic compound in direct proportion to the initial exposure concentration reaching a tissue equilibrium (6.9 times ambient initial concentration) after 6 to 12 hours. Uptake of benzene occurred initially through water and secondarily through the food source (Eldridge, Echeverria and Korn, 1978). Hedtkke (1980) examined Jordanelia floridae during various life cycle stages and reported that egg production per female was significantly reduced at levels of 3,380 ppm water-soluble fraction of oil.

Vertebrates-Birds. There are two general types of effects which birds may experience when exposed to petroleum hydrocarbons. The most obvious and generally the first effects to occur are those due to external oiling of birds in a spill. As the birds become oiled, air trapped between the feathers is eliminated and the bird may sink and drown if it is a sea bird. Slight contamination of the feathers may add substantially to a bird's weight (Holmes and Cronshaw, 1977) and affect the ability of flight feathers to form properly, thus affecting the bird's flying ability. A secondary effect of the loss of air from between feathers is a reduction in the insulating quality of the feathers. This is followed by an increase in metabolic rate as the bird attempts to maintain thermal equilibrium (Hartung, 1967).

The second mechanism of oil contamination affecting birds is internal. Experiments with ducks have shown that they may ingest up to 7 ml of oil per kg of body weight by pruning oil-contaminated plumage and may also ingest food which has been contaminated with oil (Hartung and Hunt, 1966). The effects hydrocarbons taken internally may have depends to a large extent on the life stage of the bird. As early as the 1930s, Gross suggested that spraying oil on

herring gull eggs may be used to control populations of that bird. Hartung (1965) and Kopischke (1972) have shown that embryonic development is stopped when oil is sprayed over eggs due to the impaired gas exchange through the oiled egg shell. Recently, Albers (1978) and Szaro and Albers (1977) indicated that oil may exert teragenic effects internally in the shell.

The response of juvenile birds to ingestion of oil is through changes in intestinal transfer of fluids. Animals fed 5 percent crude oil showed little mortality, but significant mortality if the dose was increased to 10 percent. The principal cause of death appeared to be electrolyte imbalance with oil causing an impairment of secretion of adrenal hormone mediating the osmoregulatory mechanisms of the gut lining (Crocker and Holmes, 1976).

Adult Pekin ducks fed 3.0 and 2.4 ml of several crude oils per kg body weight were able to survive almost indefinitely on this diet, but when subjected to cold stress showed mortality levels of about 60 percent to 90 percent after 35 days of cold (5°C) (Holmes, Cronshaw and Gorsline, 1978). Ovarian dysfunction has also been demonstrated (W. N. Holmes, personal communication).

Vertebrates-Marine Mammals. Little data exists on the effects of oil on marine mammals. Difficulties in detecting and collecting mammals which may have been contaminated or in performing experiments upon marine mammals are encountered. Mammal carcasses have been found coated with oil (Anon., 1970), but no data to date indicates clearly oil as the causative agent of death. Two laboratory studies have been done on ringed seals in order to more closely examine the effects of oil on marine mammals. The effects noted ranged from eye problems which cleared up three to four days after the exposure to death of three experimental animals within 71 minutes of immersion (Smith and Geraci, 1975; Geraci and Smith, 1976). Geraci (1972) has found liver damage in grey seals fed 5 to 10 ml of carbon tetrachloride. There is no indication of thermoregulatory problems in phocid seals, but these rely more on blubber for insulation than the otariid seals which rely heavily on the fur for thermal protection. Sea otters likewise might also suffer thermoregulatory problems since they are similar to the otariid seals in relying on fur for insulation.

The effects of oil on cetaceans is not known at this time. Reports of grey whales being affected by oil during the Santa Barbara oil spill in 1969 were not substantiated (Straughan, 1971), and since cetaceans are not shore dwelling as are the pinnipeds, it is unlikely that the degree of fouling the latter could experience would be probable. Thus, extrapolation to cetaceans from the small amount of experimental data on pinnipeds is difficult. The most likely effects to whales and porpoises would be eye irritation similar to that experienced by ring seals.

A number of studies are in progress or planned by the Alaska, New York, and Pacific OCS offices that will eliminate many of the uncertainties concerning possible effects of noise and oil on cetaceans and other marine mammals.

Ecosystem Effects. The extent of biological impacts or ecological losses are defined in this section for use throughout the EIS. Definitions are as follows:

- (1) Severe impact or ecological loss means that a species or assemblage has become extinct.
- (2) High impact or ecological loss denotes a significant long-term interference with ecological relationships. This usually involves the mortality or a biological alteration of a noticeable segment of the population, community or assemblage.

The definition of "long-term" must be rather arbitrary in terms of a specific number of years. If a generation of a particular species is eliminated from an area and it requires several generations to build the population to its original level, then this should be considered a long-term impact. However, since the reproductive periods of the various species varies from weeks in certain invertebrates to many years in other organisms, a long-term impact will, in reality, last several months to many years. Long-term impacts, as used here, will be considered to be at least two years.

- (3) Moderate impact or ecological loss is between the two extremes of impacts and must be somewhat subjective. A moderate ecological impact probably occurred on the rocky intertidal during the Santa Barbara oil spill of 1969. Although some areas experienced nearly complete mortality to several species, other species experienced low mortality. At other areas, mortality to all species affected was moderate.
- (4) Low or small impact or ecological loss denotes an interference with ecological relationships, but the interference is not particularly significant to either the relationships or the species, community or assemblage, nor long lasting. Although the time interval again is somewhat arbitrary, as used here it will be considered less than a year.

2. Manmade Structures: Manmade structures are discussed in detail in the Final Environmental Statement for OCS Sale No. 48 (USDI, 1979), in the Oil and Gas Transportation Scenarios for Proposed Sale No. 68 (Yamasaki, 1981), and as noted below.

a. Onshore: For the proposed sale, onshore manmade structure refers to shore and land facilities or structures that would be needed to support the proposed oil and gas operation. There could be a need for the following four types of facilities or structures: harbors for supply and crew boats, new temporary support bases for pipeline construction, pipelines, and airports for helicopters. Existing harbors would be utilized; no new ones would be needed. The use of existing harbors could increase the activity of onshore operations. The new temporary support bases for pipeline construction could temporarily disturb the shorelines. Pipeline installation activities could cause environmental impact. Helicopter activities should have no significant impact on the airports.

Crew and supply boats used (see Section IV.A.3) to service the proposed area could use the existing (including proposed) piers and harbors. To service the Santa Barbara Channel and Outer Bank areas crew boats could use the existing piers at Ellwood, Carpinteria, Port Hueneme, Port of Los Angeles, Port of Long Beach and the proposed Gaviota Supply Base. Supply boats could transport light equipment from the above piers and heavy equipment from Port Hueneme, Port of Los Angeles, Port of Long Beach and the proposed Gaviota Supply Base.

Crew boats would not have a significant impact on the operation of the above harbors. Supply boats could have impacts on the above harbors with respect to dock space utilization and manpower. Harbors would need facilities and manpower to handle and store incoming materials, such as powdered drilling mud and drilling cement, additives, drill pipes, transportation pipes, well casings, fuel, water, miscellaneous equipment, garbage, and waste drilling material (see FEIS Sale No. 53, Section IV.A.2).

New temporary support bases would probably be needed only for a pull-type pipeline-laying method (see Section IV.A.2.b). Four temporary operational support bases could be constructed near each of the following four proposed offshore pipeline routes (see Section I.B.1.c): West Side Santa Barbara Channel, near Point Conception; East Side Santa Barbara Channel, near Carpinteria; Anacapa-Santa Monica Basin, near El Segundo; and San Pedro, near the Port of Long Beach and Huntington Beach. These support bases could be constructed to store pipe segments, to fabricate offshore pipelines, and to store equipment and other materials. Each of the above four support bases could occupy approximately 6 ha (15 acres).

There could be approximately 3 km (2 miles) of buried onshore pipeline at El Segundo (see Section I.B.1.c). During construction, a 30.5-m (100-foot) wide pipeline right-of-way could be required. For operation and maintenance, a 15.2-m (50-foot) wide right-of-way could be adequate. Construction of onshore pipelines could cause air pollution (see Section IV.C.2) and disruption of normal traffic by construction equipment and employee vehicles.

Helicopter services would be needed to shuttle crews and lighter equipment from the airports to the drillships, pipelay barges and platforms; also helicopter services would be needed for inspections, emergencies and special situations. Helicopters could originate from the airports that are located near the proposed tract areas and are shown in the Transportation Visual. Increased helicopter traffic should have no significant impact upon airways and local airports.

b. Offshore: Additional sources of information for offshore manmade structures are in Sections I.B.1 and III.C.6, and as noted. For the proposed sale area, the following four types of offshore manmade structures are proposed: exploratory and delineation wells (drilled from exploratory rigs), production platforms, single-anchor leg-mooring (SALM) buoys and pipelines. During exploratory drilling, the anchors/chains of mobile rigs (drillships, jackups, and semisubmersibles) would disturb the sea bottom; and the location of mobile rigs could interfere with fishing and navigation. During development, construction of platforms and SALMs, and pipe-laying activities would disturb the sea bottom and would interfere with fishing, navigation, and existing structures. During production, the location of platforms and SALMs would interfere with fishing and navigation. Platforms would occupy about 3 ha (8 acres) of space. This space would not be available for fishing. Platforms could serve as a navigation aid and could be hazardous during low visibility. Disturbance of the sea bottom during above exploration and development activities could interfere with biological and cultural resources and existing structures on the ocean floor (e.g., oil and gas pipelines, wastewater discharge pipelines, and cooling water pipelines of power plants). The biological resources would include a minimal and shorter-term impact on soft bottoms and longer-term impact on hard bottoms (see Section IV.C.4). The cultural resources that could be impacted are aboriginal sites and historic shipwrecks (see Section IV.C.19). Impacts to the offshore man-made structures could cause oil spills (see Section IV.A.1) and emission of air pollutants (see Section IV.C.2).

Estimated numbers of structures are (see Section I.B.1): 150 exploratory and delineation wells, 8 production platforms, 4 SALMs and approximately 154 km (96 miles) of pipelines.

Exploratory and delineation wells are drilled from either drill ships, semi-submersibles, or, jack-up rigs. The semi-submersibles usually occupy the greatest area. Generally, the semi-submersible drilling rigs use 8 anchors which each weigh about 18,141 kgs (20 tons). Anchors could be placed at an approximate distance of 3 to 8 times the water depth of the well (FEIS Sale No. 48, III.A.3). The semi-submersible vessel OCEAN BOUNTY, for example, measures approximately 81 x 107 m (266 x 352 feet) and has eight - 18,141 Kgs (40,000 pounds) anchors (Ocean Drilling & Exploration Company, 1978). Work boats are used to position and recover anchors. There is a serious potential for sea floor disruption caused by the anchors, particularly in rocky and mud bottom areas.

A SALM facility occupies only a small space on the ocean floor and surface. However, with a vessel tied to a SALM mooring line, the vessel could swing or rotate in a circular fashion around the mooring site. The maximum swing distance for the SALM located at platform Hondo with the offshore storage and treatment facility and shuttle tanker is estimated at 601 m (1973 feet) (Devine, 1981).

Offshore pipelines could be laid from a pipe lay-barge or pulled from shore by a barge (pull-method). For the pipe lay-barge method the pipelines would be stored at an existing harbor and transported by a supply boat to the barge. Pipelines would be assembled and laid from the lay-barge. For the pull-method the pipelines would be stored and assembled at the new, temporary onshore support bases. Pipelines would be laid by having the barge pull the assembled pipelines from shore. Anchor placement for both pipe-lay methods is similar to mobile drilling rig anchor placement. The lay-barge would use 8 anchors similar to that described above; pull-method, 4 anchors which weigh about 1/2 to 3/4 of lay-barge anchors. Both pipe-lay methods would disturb the sea bed and would interfere with fishing and navigation. Anchors and chains from both pipe-lay methods could create "mud-mounds" which would interfere with trawl fishing. Unburied pipelines could interfere with trawl fishing; especially, unshrouded valves, taps and other irregular surfaces. OCS Order No. 9 requires that "all oil and gas and other pipelines be installed and maintained to be compatible with trawling operations and other uses" (see Section I.B.5). In addition, the wells and pipeline stipulation (see Section I.B.6.g) to be applied to all leases resulting from this Sale requires that subsea installations be compatible with commercial fishing. Near shore, from water depth of 61 m (200 feet) to shore, the pipeline could be buried to a minimum of 0.91 m (3 feet) by the jet-sled trencher, the clamshell digger, or scuba divers using water-jets. The pipeline burial operation could bury about 42 km (26 miles) of pipelines and excavate approximately 14,500 cubic meters (19,000 cubic yards) of sea bottom.

3. Vessel Traffic

a. Barges: Further information on barges is reported in the Proposed Sale No. 68 Proposed Oil and Gas Transportation Scenarios (Yamasaki, 1981).

Barges would continuously transport crude oil from the proposed sale areas to the refineries in the Los Angeles (LA) Basin. Barges carrying crude from the proposed sale areas to LA are described below.

Increased use of barges would increase the potential for vessel traffic accidents (Section IV.C.17). These barges could also cause oil spills (Section IV.A.1) and emissions of air pollutants (Section IV.C.2).

For Transportation Scenario No. 1 (a mixed mode of pipelines and barges) crude oil is transported by pipelines to shore from the Santa Barbara Channel and Inner Bank areas; and by barges to the Ports of Los Angeles (LA) and Long Beach (LB) from the Outer Bank area. Barging transportation is estimated as follows:

- 1) A 20,000-barrel barge would transport crude oil from the South Santa Rosa Island subarea to the refineries in LA and LB. Approximate turn-around time for the barge is 9.6 days, which totals 38 round trips per year.
- 2) A 30,000-barrel barge would transport crude oil from the Dall Bank and San Nicolas subareas. The barge would first load crude at the Dall Bank subarea followed by loading at the San Nicolas Basin and finally

unloading at the Ports of LA and LB. Approximate turnaround time for the barge is 3.4 days, which totals 107 round trips per year.

3) A 30,000-barrel barge would transport crude from the S.E. Tanner Bank - Santos Tomas Knoll subarea to the refineries of LA and LB. Approximate turnaround time for the barge is 3.1 days, which totals 119 round trips per year.

b. Supply and Crew Boats: Further information on supply and crew boats is reported in the Proposed Sale No. 68 Proposed Oil and Gas Transportation Scenarios (Yamasaki, 1981). The most probable condition is indicated in Table I.B.1.b-1 and other referenced reports.

Supply and crew boats would continuously service the drill ships, pipe-lay barges and platforms. These boats could interfere with commercial vessels, commercial fishing boats, recreation boats, and harbors. For a discussion of the piers and harbor involved in Proposed Sale No. 68, see Section IV.A.2.a.

The supply and crew boats would service the proposed sale areas from the nearest existing and assumed existing piers and harbors. It is estimated that these boats could service the proposed subareas as follows: West Side Santa Barbara Channel by 60 crew-boat and 9 supply-boat trips per month from the proposed Gaviota Supply Base; East Side Santa Barbara Channel by 60 crew-boat trips per month from Carpinteria Pier and 9 supply-boat trips per month from Port Hueneme; Anacapa - Santa Monica Basin by 60 crew-boat and 9 supply-boat trips per month from Ports of Los Angeles and Long Beach; South Santa Rosa Island by 7 crew-boat and 9 supply-boat trips per month from Port Hueneme; Dall Bank, San Nicolas Basin, S.E. Tanner Bank and Santo Tomas Knoll by 7 crew-boat and 9 supply-boat trips per month from each of the subareas to Ports of LA and LB.

4. Noise and Other Disturbances: Noise emissions resulting from OCS development are associated with the operation of offshore platforms, drilling rigs, petroleum transfer facilities, onshore processing plants, pump stations, helicopters, etc. In addition, construction equipment used during the installation of the various facilities emit various amounts of noise. The degree of noise impact depends upon the emitted sound level and the proximity of the source to a noise sensitive receptor such as a school, hospital, residence, etc. The precise location of the various facilities is not known at this time. Thus, site specific noise impacts cannot be evaluated here; however, they will be considered in a future environmental document when development plans are known.

Machinery noise sources found on drilling and production platforms are, generally, similar to those used for shore-based operations. Special noise attenuation devices are sometimes used offshore to protect workers in their living quarters located on the platforms. Compressors and diesel electric engines are usually the loudest equipment on a typical platform emitting about 90 dBA at a distance of 15 m (50 feet). By comparison, a diesel truck under full load also emits about 90 dBA at 15 m. Although other sounds, such as banging of pipes and use of explosives may be more intense, they are of extremely short duration. The possible impact of Proposed Sale No. 68-related noise emissions on the biological environment is discussed in subsequent sections.

In a quiet sea with light wind conditions, normal offshore platform operations would be inaudible beyond about 2 miles (assuming ambient background noise level of 40 dBA and attenuation due to sound wave spreading only). In rough seas and weather conditions, the offshore facility would be inaudible beyond about 1/8 of a mile (assuming 70 dBA background). No onshore noise impact from normal operation of OCS platforms are expected since even under low background noise conditions they would not be audible from shore. Onshore noise levels could be slightly increased by Proposed Sale No. 68-related vessel, vehicle and helicopter traffic; however, these increases are generally expected to be small. Gales (1981) points out that in light seas the sub-sea surface noise propagated by a platform could be detected up to 100 miles away.

Most of the onshore processing and support facilities would necessarily be located in industrially zoned areas where noise would have a minimal impact. If adjacent sensitive receptors were impacted, mitigation measures such as sound barriers (i.e., earthen berms, block walls, etc.,) and mufflers could be utilized. The site specific noise impact of these developments will be considered in a future EIS when detailed development plans are known.

5. Effluents and Discharges

a. Water: As a result of the proposed sale, the development and operation of offshore oil- and gas-producing facilities will discharge materials that may potentially have an impact on the natural environment. Material that is discharged from offshore oil and gas operation will result from two types of activities: 1) the normal or routine activities that may occur day-to-day, and 2) the episodic or occasional massive emission events (e.g., oil spill) resulting from equipment failure, poor operation techniques or a variety of events. Materials that may be routinely discharged from oil and gas development and production are drilling cuttings and muds, formation water and treated sewage. Discharge of effluents from OCS activities is under the jurisdiction of the EPA through the National Pollution Discharge Elimination System permits.

Drill Cuttings and Muds. Once drilling starts, drill cuttings and drilling muds will be dumped into the marine environment. Daily discharge of cutting ranged from 0-28 m³/day (0-176 bbl) and 10-20 bbls of drilling muds (ECOMAR, 1978) for a 3,419 m exploratory well.

The total amount of drill cuttings and drilling muds estimated to be discharged into the marine environment as a result of this sale and specific information for each area is given in Table IV.A.5.a-1.

It should be noted that the discharge figures given for drilling muds in Table IV.A.5.a-1 are liberal. During production phases of OCS operations, drilling muds are normally used in drilling several wells from the same platform. In the case of costly muds, the fluids may be transported to other platforms for use in drilling production wells (Dames and Moore, 1980 comments on DEIS for Sale No. 53).

A comprehensive discussion on the functions, disposal and composition of drilling muds in common use in the Southern California OCS are found in the Final EIS OCS Sale No. 53 (USDI, 1980a) and Sale No. 48 (USDI, 1979). Table IV.A.5.a-2 lists the quantities of materials used in several southern California OCS wells and Table IV.A.5.a-3 gives the functions of the major components used in typical muds. The majority of most drilling muds as can be seen from these tables are relatively inert clays or relatively insoluble barium sulfate (barite).

Considerable amounts of drilling cuttings are also expected from oil and gas activity in the Proposed Lease Sale No. 68 Area (Table IV.A.5.a-1). Drilling cuttings are sedimentary rock chips identical to the rock types through which the well is drilled. They are usually discharged from the platform or rig after being treated in a shaker which removes the majority of hydrocarbons (if any) from the rock fragments.

Discharge of drilling mud must comply with requirements found under OCS Order No. 7 and the National Pollutant Discharge Elimination System (NPDES) permitting procedures. Both of these requirements restrict the discharge of any drilling mud containing oil. The U.S. Geological Survey, Conservation Division, states if any oil base mud is used, the mud would not be released to the ocean, and cuttings would be cleaned or barged to shore for disposal. Currently,

TABLE IV.A.5.a-1

ESTIMATED TOTAL AMOUNT OF DRILLING FLUID AND WASTE

<u>Area</u>	<u>Drill Cuttings (1000 BBLs)</u>	<u>Drilling Muds (1000 BBLs)</u>	<u>Formation Water (Mil. BBL)</u>	<u>Sewage (Gal/Day)</u>
Santa Barbara Channel	183	117	67	7,600
Inner Banks and Basins	65	35	70	7,600
Outer Banks and Basins	146	68	93	15,200
TOTAL	394	220	230	30,400

TABLE IV.A.5.a-2

DRILLING MUD TYPES AND RESPECTIVE COMPONENTS OF
RECENT (1976 ((Late)) TO 1978) PRACTICES
ON SOUTHERN CALIFORNIA OCS

OCS Area	Mud Type	Components	Lbs/42 Gal. bbl ^a
<u>San Pedro (OCS)</u>			
<u>Depth</u>			
0-800'	Sea water	Sea water	
900-1,600'	Gel/Salt water	Bentonite	20 PPB
		Salt	7
		Lignosulfonate	3
		Caustic Soda	0.5
		Barite	1
1,600-4,600	Gel/Salt water (treated)	Bentonite	20
		Salt	7
		Lignosulfonate	5
		Caustic Soda	1
		Barite	80
		Lost Circulation Material	10
		Drispac (CMC)	1
<u>Dos Quadros (OCS)</u>			
0-350'	Sea water	Sea water	
350-1,200'	Salt Gel	Injection water	(11,000 PPM C1)
		Attapulgate Clay	10-12 PPB
		Caustic Soda	>0.5 PPB
		Bicarb	>0.5 PPB
1,200-3,000'	Gel/Water	Injection water	
		Bentonite	10+ PPB
		Drispac	1 PPB
		Caustic Soda	>0.5 PPB
		XMDL (Surfactant)	1-2 PPB
<u>Oakridge (OCS)</u>			
0.200'	Sea water	Sea water	
200-400'	Gel/Water	Bentionite	25 PPB
		Lignosulfonate	2 PPB
		Caustic Soda	>0.25 PPB
		Soda Ash	>0.5 PPB

TABLE IV.A.5.a-2 (Cont.)

OCS Area	Mud Type	Components	Lbs/42 Gal. bbl ^a
400-3,500'	Gel/Water (treated)	Bentonite Lignosulfate Caustic Soda Soda Ash Barite	20 PPB 4 PPB 1 PPB >1 PPB 60 PPB
3,500-5,000'	Gel/Water (treated)	Same as above + Barite	65+ PPB
5,000-8,000	Gel/Water (treated)	Same as above + Barite + Poly Rx + Defoamer + Lost Circulation Material	100-120 PPB 1-2 PPB - 5-10 PPB
8,000'	Perforating Fluid	Calcium Chloride	110-120 PPB
5,000-8,000'	Minimum Solids Non-Dispersed	Same as above + Barite	180-200 PPB

^aOne pound per barrel. Metric equivalent is 2,449 mg/l.
Source: (Lloyd, 1978)

TABLE IV.A.5.a-3

MATERIALS AND THEIR USE IN DRILLING MUDS

Material	Usual Purpose
<u>Gelling and Suspending Agents</u>	
Bentonite (Sodium montmoillonite clay)	Provide gel properties
Attapulgate (a clay mineral)	Provide gel properties in very high salinity fluids and to overcome loss of circulation
Acrylic polymers	Increase thickening properties of bentonite
<u>Thinners and Filtrations Control Agents</u>	
Chrome lignosulfonates	Thinner (deflocculant) and filtration control agent
Lignites	Thinner and filtration control agent, usually at high temperatures (<300°F)
Tannins including quebracho	Thinner for fresh water muds at lower temperatures (<250°F)
Sodium acid pyrophosphate (SAPP) and other complex phosphates	Thinner (deflocculant of fresh water muds at lower temperatures (<250°F.), treatment for cement or anhydrite contamination
Pregelantinized starch	Filtration control
<u>Density Control Agent</u>	
Barite (BaSO_4)	Increase mud density
<u>pH and Other Ion Control Agents</u>	
Caustic soda (sodium hydroxide)	pH control
Soda ash (sodium carbonate)	Remove Ca^{++} (anhydrite) contamination by precipitating CaCO_3
Sodium bicarbonate	Treatment for cement contamination
Lime	pH control and Ca^{++} control
Sodium chromate	Improve high temperature (<300°F) thinning action of lignosulfonates and lignates
Sodium chloride	Salinity control in very special purpose muds
Calcium chloride	Salinity control in very special muds
<u>Organic Specialities</u>	
Surfactants	Improve flow properties
Defoamers	Improve flow properties, minimize density variations
Bactericides	Protect organic additives from microbial decomposition
Corrosion inhibitors	Protect metal parts

Source: Adapted from Gray 1970.

the only mud components used to make up drilling mud that must be registered with the Environmental Protection Agency are bacteriacides (CFR 40,162.26).

Discharge of Formation Water. Formation water or oil field brine is recovered along with oil during petroleum production. The formation water is derived from water that was laid down interstitially with the sediments in the geological past. During the compaction, some of this interstitial water (connate water) was displaced from the resulting formation to form formation water. Consequently, formation waters reflect their environment of deposition.

After separating oil from formation water, the formation water may be disposed of by injecting into disposal wells, reinjecting into producing wells, discharging into the marine environment, or a combination of these three disposal methods. Traditionally, Southern California OCS formation waters have been discharged into the marine environment.

Under EPA effluent limitations (CFR, 1975), "...the design of formation and other wastewater disposal systems will limit the oil content of discharged effluent to a maximum of 72 mg/l for any one day, and a 30-consecutive-day average not to exceed 48 mg/l..." During initial oil production, formation water volumes will represent a very small fraction of total fluid extracted from the well, with oil composing almost the total amount of fluid. As the oil reservoir is depleted, the ratio of formation water to total extractable fluid increases.

Formation water volume estimates are shown for the three general sale areas in Table IV.A.5.a-1. Over the first 20 years of production, a total of 220 million barrels of formation water are expected to be discharged within the proposed sale areas.

The reader will find a more detailed discussion of the composition of typical Southern California formation waters given in the Final EIS for OCS Sale No. 53 (USDI, 1980a) and Sale No. 48 (USDI, 1979) and in Tables IV.A.5.a-4 and IV.A.5.a-5.

Sewage. The estimated annual discharge of sewage from proposed oil and gas activity is shown in Table IV.A.5.a-1. OCS Order No. 8 states "following sewage treatment, the effluent shall contain 50 ppm, or less, of suspended solids, and shall have a minimum chlorine residual of 1.0 mg/liter after a minimum retention time of 15 minutes. The daily volume of sewage that will be discharged within each of the proposed areas will range from 7,600 gallons/day to 15,200 gallons/day. Sewage discharge was estimated as 100 gal/day/person on the platform.

Hydrocarbon Discharges. Hydrocarbons may be discharged into the marine environment as a result of accidental spills from episodic or occasional massive emission events. The volume of oil which enters the marine environment will depend on the type of accident and is very difficult to predict. Once the oil enters the ocean a variety of physical and chemical processes act to disperse the oil slick including spreading, evaporation of the volatile constituents, dissolution into the water column, emulsification of small droplets, agglomeration and sinking, microbial modification, photochemical modification and biological ingestion and excretion. The rates at which the oil is removed

TABLE IV.A.5.a-4

TYPICAL CHARACTERISTICS OF EFFLUENT WATER TREATMENT FACILITIES
Phillips Petroleum Company
OCS P-0166 Lease - La Conchita Plant

Physical Properties		Chemical Properties, mg/l	
pH	7.3	Aluminum	2.2
Specific Gravity	1.02	Ammonia, N	39.7
Turbidity	12 JTU	Arsenic	0.001
Total Dissolved Solids (Calc.)	40,400 mg/l	Barium	0.
Total Solids	20,990 mg/l	Bromide	183.8
Total Volatile Solids	1810 mg/l	Cadmium	0.030
Total Suspended Solids	56 mg/l	Chromium	0.020
Settleable Solids	0.1 mg/l	Copper	0.116
Floatable Solids	0.1 mg/l	Cyanide	0.004
Temperature	77°F 25°C	Fluoride	1.7
BOD, 5-day	450 mg/l	Iron	1.35
COD	691 mg/l	Lead	0.28
Specific Conductance	31,630 m-mhos/cm		
Max. CaSO ₄ Possible (Calc.)	0. mg/l	Magnesium	50.0
Max. BaSO ₄ Possible	0. mg/l	Manganese	0.062
Alkalinity as CaCO ₃	3840 mg/l	Mercury	0.0005
		Nickel	0.29
<u>Dissolved Solids</u>		Nitrate, N	0.0
<u>Cations</u>		Nitrate, N	0.000
Total Hardness	10 me/l	Kjeldahl Nitrogene	54.6
Sodium, Na ⁺ (Calc.)	15.000 mg/l	Phosphorus-Ortho, P	1.54
Calcium, CA ⁺ +	80 mg/l	Phosphorus, P	1.89
Magnesium, Mg ⁺ +	72 mg/l	Silver	0.030
Iron (Total), Fe ⁺⁺⁺	1.0 mg/l	Zinc	0.18
<u>Anions</u>		Phenolic Coumpounds	2.10
Chloride, Cl ⁻	21,000 mg/l	C6115011	
		Identifiable	
Sulfate, SO ⁻	0.mg/l	Chlorinated	None
Carbonate, CO ₃	0. mg/l	Hydrocarbons	
Bicarbonate, HCO ₃	4,270 mg/l	Radioactivity	
		Gross Alpha	
		Actitivity	None
Hydroxyl, OH ⁻	0. mg/l		Detected
		Gross Beta	
		Actitivity	None
Sulfide, S ⁻	1.1 mg/l		Detected
		Oil and Grease	5.0
<u>Dissolved Gases</u>			
h ₂ S	0.4 mg/l		
CO ₂	320 mg/l		
O ₂	0.3 mg/l		

TABLE IV.A.5.a-5

CALIFORNIA OFFSHORE PRODUCED FORMATION WATER
Constituents Range^a

Formation Water Constituent	Concentration (mg/l)
Salinity (Total dissolved solids)	21,700 - 40,400
Suspended solids/turbidity (Untreated water)	30 - 75
Oxygen Demand	
BOD (5-day)	370 - 1,920
COD	340 - 3,000
Oil and Grease	56 - 359
Trace Contaminants	
Arsenic	0.001 - 0.08
Cadmium	0.02 - 0.18
Total Chromium	0.02 - 0.04
Copper	0.05 - 0.116
Lead	0.0 - 0.28
Mercury	0.0005 - 0.002
Nickel	0.100 - 0.29
Silver	0.03 -
Zinc	0.05 - 3.2
Cyanide	0.0 - 0.004
Phenolic Compounds	0.35 - 2.10

Source: EPA, 1974.

^aSome data reflect treated waters for reinjection.

NOTE: Due to the limited data from California offshore wells, these values represent estimated constituent values.

from the ocean will depend on water temperature, current movements which may spread dissolution, wind speed which may aid evaporation and physical mixing by wind waves. A more complete discussion of these factors is found in Malins (1977) and Wolfe (1977).

In addition to the larger spills from rare accidents, some oil is expected and observed around drilling and production operations. These volumes are probably less than one barrel per day, resulting from small amounts of oil remaining on cuttings, after washing, small amounts spilled when hoses are uncoupled and amounts accidentally discharged from work boats. It should be noted that production platforms are provided with below-deck pans and tubing to catch and funnel small amounts of oil which may be related to the drilling equipment for proper disposal onshore. These small amounts of oil are sometimes seen as a sheen on the water near the platform, dissipate within several meters to several hundred meters and are generally considered an insignificant input of hydrocarbons.

Relative Amounts of Effluents: The amount of effluent material expected to be discharged into the marine environment from OCS activities resulting from Proposed Sale No. 68 should be compared to the amounts expected from previous OCS Lease Sales in the area and also to other sources of effluents in the region. These comparisons are instructive and useful in evaluating the significance of impacts to the entire area under consideration. The assumptions in these comparisons are that the impacts of effluents are evenly distributed throughout the entire area and that various effluents (for example, drilling muds and sediment river runoff) are comparable (behave similarly and have similar effects). Although these assumptions, inherent in the comparisons, are violated at the outset for some of the properties of some effluents, there are enough similarities in effluent impacts (e.g., both drilling mud and river runoff sediments may smother marine communities) to warrant the comparison. Additional benefits of comparing amounts of effluents are the identification of cumulative impacts sources, identification of areas free from impacts of one or more of the effluent sources, and the identification of areas where pollutant loads may be near critical as regards the impacts on marine ecosystems. The approximate ratios for effluent discharges resulting from projected oil and gas activities from Proposed Sale No. 68 to those effluent volumes expected from the two previous lease sales in the Southern California Bight (Sale Nos. 35 and 48) are given in Table IV.A.5.a-6. The cumulative volumes of discharge are compared to the total volume of municipal effluents currently being discharged from the five largest onshore municipal and industrial sewage treatment plants volume, considerable sediment load from stream and surface runoff during storms and normal discharge of rivers and littoral drift (currents along the shore moving sediments). Volumes estimated for these latter types of sediment loads are: 6,360,000 barrels per year entering the eastern Santa Barbara Channel (Civil Engineering Laboratory at Point Hueneme) from Ventura River (560,000 bbls), Santa Clara River (4,500,000 bbls), and along shore beach drift (1,300,000 bbls); 100,000,000 barrels deposited on the Santa Barbara-Oxnard Shelf during 1969 flood year (R. Kolpack), 1969 in Biological and Oceanographical Survey of the Santa Barbara Channel Oil Spill, Allan Hancock Foundation). From the data presented above, it would appear that the sediment load imposed by Proposed Sale No. 68 (approximately 7 percent of the municipal sewage sludge burden) is not significant compared to the other sources of sediment in the region.

TABLE IV.A.5.a-6*

CUMULATIVE DRILLING EFFLUENTS

Source	Drilling Muds (BBL's)	Drill Cuttings (BBL's x 10 ⁶)	Formation Water (BBL's x 10 ⁶)	Sewage (Gal/Day)
Sale No. 35	454,545	1.1	14	120,000
Sale No. 48	469,146	1.052	139.6	54,000
TOTAL	923,691	2.1052	153.6	174,000
Sale No. 68/ Sale 35 + 48	0.24	0.19	1.50	0.17
Municipal- Industrial Discharges	Suspended Solids	Sludge (7 Mile Hyperion)	Flow Total Volume	
	26.06 x 10 ⁶ BBL's	5.631 x 10 ⁶ BBL's	184.04 x 10 ⁹ BBL's	
	Oil and Grease			
	5.958 x 10 ⁶ BBL's			

Ratios:

<u>All OCS Lease Sales Mud</u>	=	0.044
M-I Discharge Suspended Solids		
<u>All OCS Lease Sales Cuttings</u>	=	0.44
M-I Sludge		
<u>All OCS Lease Sales Formation Water</u>	=	0.0021
M-I Flow		
<u>Sale No. 68 Muds</u>	=	0.0085
M-I Discharge Suspended Solids		
<u>Sale No. 68 Cuttings</u>	=	0.0699
M-I Discharge Sludge		
<u>Sale No. 68 Formation Water</u>	=	0.0012
M-I Discharge Flow		

* Volumes given are for the life of each lease sale's projected fields and for comparable 20-year periods of municipal sewage discharge. The latter assumes no increase in discharge.

This comparison remains valid in areas nearshore and probably the inner basins of the Bight where sewage sediment (sludge) and runoff or littoral transport sediments are significant. However, in areas such as the Tanner-Cortes Banks, Outer basins and sill regions between basins, the OCS activity muds and cuttings impacts may account for significant quantities within the dispersion radius of these effluents around the points of discharge.

The figures presented for the expected volumes of drilling muds, drill cuttings, formation water and sewage discharged from all OCS oil and gas operations up to and including this Sale for southern California are greatly in excess of the present volumes and may never be reached due to delays in development, dry wells, etc. Especially interesting in this comparison of OCS oil and gas activity sources of pollution with the municipal sewage outfalls is the volumes of oil and grease which will enter the marine environment during a 20-year period. No figures can be given for projected oil discharge from oil production platforms since the USGS models used to generate spill probabilities do not give finite spill volumes with expected numbers of spills (only spills greater than or lesser than a cut-off point). The USGS Open-File Report 80-101 lists only one platform blowout in the 8-year period 1971 to 1978. This resulted in less than 1,000 barrels of crude oil being spilled. Projecting from this record, the amount of oil expected to be discharged accidentally from platforms in the Southern California Bight is miniscule compared to the approximately 298,000 barrels of oil and grease being discharged from major sewage outfalls annually. Crude oil and oil and grease from municipal sources may not, as in the case of drill cuttings and sludge, be strictly comparable but the comparison does serve to demonstrate the magnitude of pollution sources in the lease sale area.

The comparison of crude oil spill volumes expected with oil and grease volumes expected from municipal wastes faces two main difficulties. The first is that the nature of the hydrocarbons and their relative amounts are different in crude oil than in sewage oil and grease (although refined crude oil products do find their way via street runoff into the latter). Thus, the volume of benzene in a crude spill may be much larger than in an equivalent volume of oil and grease from municipal sewage and as far as benzene affects water quality or imposes other impacts, the volume of crude oil expected to be spilled may be significant. The second difficulty the comparisons face is that the rates of input of hydrocarbons in a crude oil spill may be expected to be much higher than the average 821 barrels per day of oil and grease from municipal sewage. Thus, although volumes of crude oil expected to be accidentally discharged are miniscule compared to oil and grease from sewage the rates of spillage or discharge may be the significant figure. Some evidence to this latter point by Spies is discussed in Section IV.C.1.

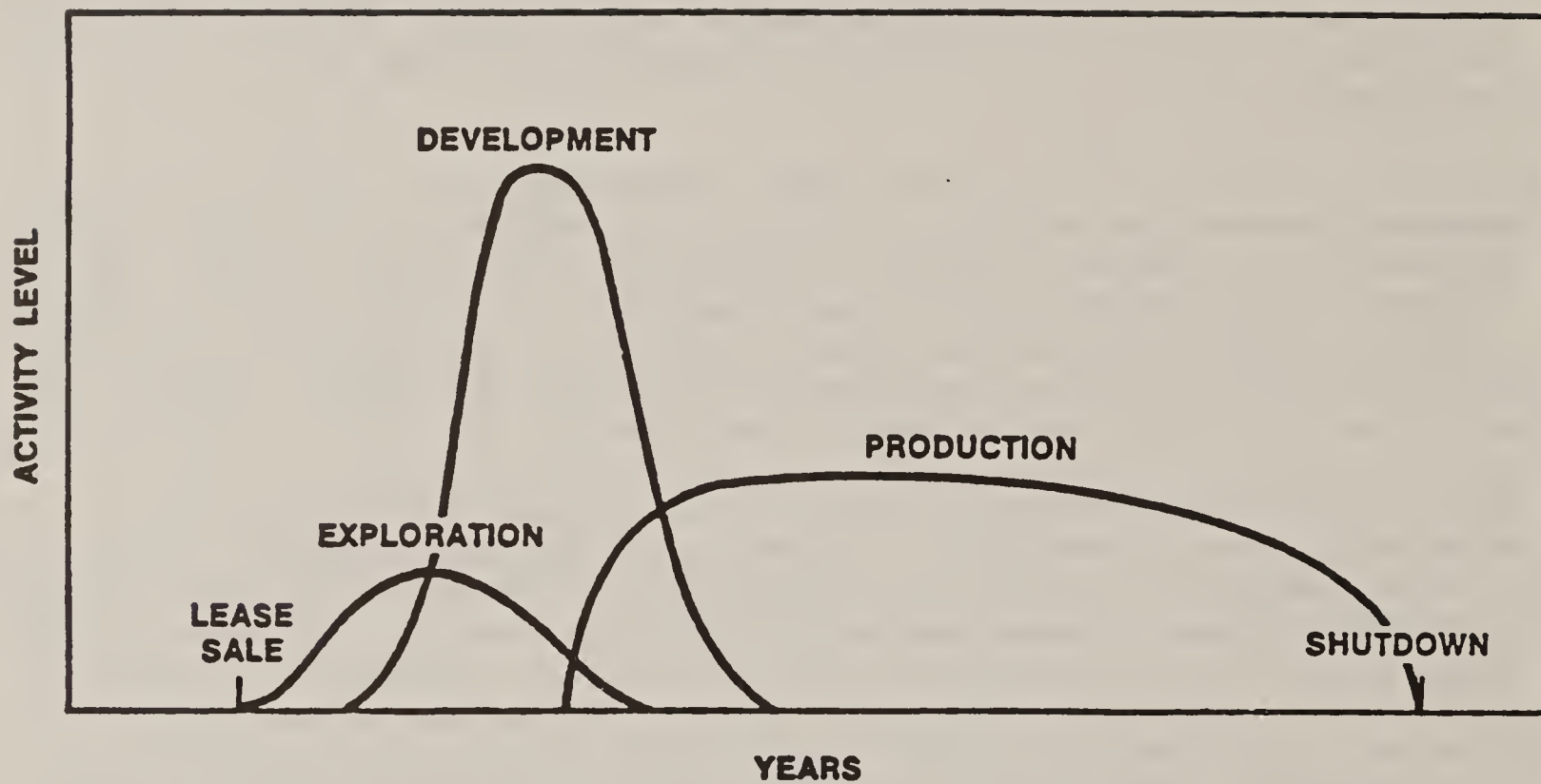
b. Air

i. Sources of Air Emissions: There are seven major air pollutants for which standards have been set to protect public health and welfare. In this section, the emissions of six of these regulated pollutants are discussed for each phase of OCS activity. (The seventh, lead, is not considered an OCS development-related pollutant). Figure IV.A.5.b.i-1 shows how economic activity level varies with time during different phases of OCS oil and gas development. Estimates of pollutant emissions for each of the Proposed Sale No. 68 lease zones shows that emissions are expected to vary in proportion to the level of OCS activity. Thus, Figure IV.A.5.b.i-1 indicates the relative magnitude of OCS emissions projected during the course of OCS development.

Emissions during the exploration phase are produced by 1) power generating equipment needed for drilling, 2) tug boats, supply boats and crew boats in support of drilling activities, 3) intermittent operations such as mud degassing, well testing and related operations, and 4) related onshore supportive activities (such as employees' cars and shuttle helicopters). Pollutants involved in this phase of development are primarily nitrogen oxides, carbon monoxide, and sulfur oxides and are projected to occur in the years 1982-1985.

During the development phase, total project emissions increase greatly. The expected stationary emissions sources are reciprocating engines and turbines used to provide power for drilling, and heavy construction equipment used to install platforms. The primary mobile emission sources in the development phase would be the tug boats and barges used for platforms and pipeline installation, and onshore vehicular traffic. The emissions associated with these sources would be emitted along a route which could extend as far as 100 miles from the lease block area. The principal development phase emissions are nitrogen oxides with lesser amounts of sulfur oxides, carbon monoxide and particulate matter. These emissions are projected to begin in 1985, peak near the start of production in each zone, and decline during the following 1 to 6 years.

As indicated in Figure IV.A.5.b.i-1, total pollutant emissions projected during the production phase would be lower than during development. Principal stationary emission sources of nitrogen oxides during the production phase are turbines used to generate power for gas compression, oil pumping, water injection, etc. The major short term source of reactive hydrocarbon (volatile organic compounds, or VOC) emissions during the production phase is from tanker loading/ballasting operations. Potential onshore tankering emissions would occur principally in the Los Angeles area. Emissions in port were considered as a part of the inventory for the resource zone in which the oil was produced. A significant amount of VOC emissions are also produced from oil/water separators, pump and compressor seals, valves, and gas processing operations and onshore storage tanks. Other emissions sources during the production phase include exhaust emissions from tanker and barge engines (sulfur dioxide, nitrogen oxides, carbon monoxide) gas processing plants (sulfur dioxide, hydrogen sulfide, and nitrogen oxides), and onshore transportation systems (nitrogen oxides, VOC, and carbon monoxide). Total air pollutant



Source: Modified from Offshore Oil Development on the Georges Bank, CONOCO, 1976.

Figure IV.A.5.b.1-1 Relative Activity Levels During Phases of Offshore Development

emissions would gradually decrease as oil production declines in each tract zone.

ii. Proposed Sale No. 68 Emissions Inventory: A complete emissions inventory of the sources described above was prepared as a part of the Proposed Sale No. 68 Air Quality Study (POCS Technical Paper No. 81-7, Environmental Resources Group). The analysis is intended to estimate conservatively the relative magnitude and distribution of emissions from Proposed Sale No. 68 activity. The emission projections have been based upon USGS mean resource estimates for each of the three proposed lease tract areas. Because of large uncertainties involved in estimating the quantities of resources and scope of planned development, the results should be regarded as rough approximations.

In the development of the emissions inventory, mobile sources such as ships, barges, and tugboats contributed significantly to the totals for each pollutant. No additional mitigation measures were assumed beyond those normally used by industry or mandated by existing regulations. Emission limitations on OCS sources, which DOI promulgated in final form on March 7, 1980, were considered in this analysis. These regulations specify emission limitations on each source to prevent significant onshore impacts. The department will require additional controls on sources that may cumulatively have a significant impact. Because the specific information on these additional controls is not currently available, they have not been included in this analysis. The mitigating effect of the proposed California OCS air regulations which DOI proposed on March 7, 1980 have not been considered. For onshore sources, only those pollution controls legally required by State and local regulatory agencies have been assumed. In POCS Technical Paper No. 81-7 (Environmental Resources Group, 1981), details of the assumptions used in the development of this inventory are presented. The reference document also contains projections of the maximum expected daily and hourly emissions of the mean resource estimates along with the annual emissions for the 5 percent and 95 percent resource estimates. In general, total annual emissions are roughly proportional to the USGS resource estimates.

Table IV.A.5.b.ii-1 shows total annual emissions associated with peak development and peak production years for each of the six pollutants, each OCS zone and each BLM transportation scenario. From the table, it can be seen that of all pollutants carbon monoxide and nitrogen oxides are emitted in the largest quantities followed by VOC, sulfur dioxide, particulates, and hydrogen sulfide in descending order. Volatile organic compounds and to some extent nitrogen oxides are considered precursors to formation of photochemical smog (primarily ozone). The predicted impact of Proposed Sale No. 68 emissions on ozone and other air pollution concentrations is discussed in Section IV.B.

The highest total pollutant emissions are associated with the Outer Banks tracts, followed by Santa Barbara Channel and the Inner Banks. Outer Banks emissions are relatively large owing to significant contributions from tanker and supply vessel traffic traveling the approximately 200 miles round-trip into Los Angeles refineries. In addition, the DOI OCS air quality regulations require less pollution control equipment for developments in the Outer Banks than would be required of developments located closer to shore. As a result of these factors, Outer Banks emissions are somewhat higher than resource estimates alone would indicate. In all lease zones, total pollutant emissions

TABLE IV.A.5.b.ii-1

MAXIMUM ANNUAL EMISSIONS ASSOCIATED PROPOSED SALE NO. 68 OCS ACTIVITIES IN THE PEAK
DEVELOPMENT AND PEAK PRODUCTION YEARS, MEAN RESOURCE ESTIMATE

TONS/YEAR--ALL SOURCES (Percent of Emissions from Mobile Sources)¹

Zone	Emissions Year	VOC	NO _x	SO _x	CO	TSP	H ₂ S
<u>SANTA BARBARA CHANNEL</u>							
Pipeline Scenario	Peak Development ³	51.1(38)	1,356.5(51)	92.0(48)	380.9(62)	67.7(42)	
	Peak Production - 1990	63.3(31)	510.2(52)	86.0(22)	163.1(38)	27.0(42)	1.9
Barging Scenario	Peak Development ³	51.1(38)	1,356.5(51)	92.0(48)	386.0(63)	67.7(42)	
	Peak Production - 1989	362.6(6)	682.8(53)	96.9(26)	176.8(43)	32.9(47)	1.9
<u>INNER BANKS</u>							
Pipelines	Peak Development - 1987	53.3(17)	916.0(24)	176.8(9)	201.3(36)	44.8(23)	
	Peak Production - 1989	77.1(7)	478.8(36)	541.5(3)	172.5(28)	23.7(34)	2.0
<u>OUTER BANKS</u>							
Tankering	Peak Development - 1989	306.5(6)	1,873.6(49)	249.4(26)	439.4(43)	89.4(47)	
	Peak Production - 1992	378.2(7)	1,607.9(62)	252.8(27)	413.3(48)	75.7(60)	3.7

1. Based on the emissions presented in POCS Technical Paper No. 81-7 (Environmental Resources Group, 1981).
2. Hydrogen sulfide emissions are only associated with production activities. Hydrogen sulfide emissions during the peak development phase are less than 0.7 tons per year (see POCS Technical Paper No. 81-7 for detailed estimates).
3. Peak development for both the pipeline and barging scenarios for all pollutants occurs in 1986 except for carbon monoxide which peaks in 1987.

during the peak development phase are higher than during the peak production year. This is due to the coincident occurrence of high levels of production along with continuing development activities.

Total peak year emissions of NO_x , for the Santa Barbara Channel tracts are 4 percent of the existing onshore NO_x emissions. VOC, SO_2 , CO and TSP emissions are less than one percent of the existing onshore emissions. Onshore emissions of pollutants in Santa Barbara and Ventura Counties are relatively low compared to the South Coast Air Basin) because of the lack of heavy industry and light vehicular traffic. The pollutants emitted from the Inner and Outer Banks tracts are less than 1 percent of the existing onshore San Diego and South Coast Air Basin emissions.

Table IV.A.5.b.ii-1 also shows the following relationships for Proposed Sale No. 68 emissions:

- The year of peak development and peak production emissions is projected to be different for each of the proposed lease zones.
- For NO_x and CO, peak emissions occur during the development phase in all areas. These development-related NO_x and CO emissions are largely due to reciprocating engines and turbines to provide power for drilling; and heavy construction equipment to install platforms. Peak emissions of SO_x , TSP, and VOC generally occur during the production phase. These emissions occur largely as a result of platform turbine operation, tanker loading/ballasting, and oil and gas processing.
- Transportation of Santa Barbara Channel production to Los Angeles by pipeline would reduce VOC emissions by a factor of three compared to barging. The pipeline scenario would also result in slightly lower emissions of NO_x , SO_x , CO, and TSP.
- Approximately one-half of the total Proposed Sale No. 68 emissions of NO_x , CO, and TSP for the Santa Barbara Channel and the Outer Banks result from mobile sources.

6. Changes in Economic Activity: Oil and gas leasing activities cause economic and social change in coastal regions as a result of direct, indirect and induced changes in economic activity. These changes may involve both social benefits and losses. Social benefits occur if labor (and possibly land and capital resources) that were previously unemployed or underemployed are used to capacity and there is a net increase in earnings and income in the region. Conversely, social costs may be incurred if, at the same time, these economic changes cause social dislocations and decrease economic and social welfare in the region. The extent of both positive and negative impacts depends on the scope and nature of the action. Impacts from a project may be lessened if the affected regions have the ability to plan for and assimilate changes in economic activity.

The degree to which an area is affected by economic change depends primarily on the size and nature of the existing supply of labor and other economic resources. The important socio-economic indicators are current levels of employment and income, the availability of public and private services, the existing oil and infrastructure and characteristics of the remaining resource base.

Economic impacts to coastal regions potentially affected by Proposed Sale No. 68 development have been derived from the Harris Economic Model. The Harris Model is an econometric quantification of many important economic variables on a multi-region, multi-industry basis. A complete description of the data, estimating procedures, and relationships which exist within the model can be found in: Harris Curtis C., Jr. The Urban Economies, 1985. Lexington, Mass: D. C. Heath & Co., 1973; and Harris, Curtis C., Jr. and Frank E. Hopkins, Locational Analysis: An Interregional Econometric Model of Agriculture, Mining, Manufacturing and Services, Lexington, Mass: D. C. Heath & Co., 1972. Its central premise is that in an economy with many economic interdependencies, regional output changes cause changes in employment and income, which affect the regional demand for goods, labor and capital.

Economic changes are measured against base case projections of activity in the region. Forecasts are made by the Harris Model assuming that Proposed Sale No. 68 development does not occur. This base case includes projections for other activities expected to occur such as the Liquified Natural Gas Terminal construction, the Missile-X Program, the Space Shuttle Project, oil and gas leasing in State waters and previous OCS Sales (including the 1966 and 1968 Sales, and Sales Nos. 35, 48 and 53). Economic variables are then modified to incorporate anticipated Proposed Sale No. 68 development and the model is rerun. The projections are then compared to those for the base case to determine the impact of Proposed Sale No. 68.

The primary impact-producing agents which cause social and economic changes are OCS-related employment, investment and income (royalties on production). POCS Technical Paper No. 81-3 (Dowling, 1981) describes in detail the economic components that were developed for Proposed Sale No. 68. This paper also contains the output tables from the Harris Model showing the difference between the base case and Proposed Sale No. 68 projections.

These economic changes just mentioned generate indirect and induced effects (also called multiplier effects) on population, employment and income. These changes may also result in increased demand for community services and facilities and thereby affect public revenues and expenditures. The relationship of employment, investment and income to indirect and induced effects is the subject of the following discussion.

OCS development will generate both direct and indirect employment. Direct employment refers to jobs created by the oil industry which is involved in OCS activities both offshore (exploration, development and production) and onshore (processing and support activities). Induced employment is generated by the spending of OCS-related wages and income. The multiplier effect resulting from an increase in jobs and income related to OCS activity will be spread among many sectors of the regional economy. The total impact on employment and income in an economy resulting from an increase in employment and income in OCS petroleum-related sectors may be several times the initial increase. The chain of secondary expansions of income and production is set in motion once a change has been introduced into the system. The projections made by the Harris Model include the total cumulative effect on employment and income.

In the case of Proposed Sale No. 68, direct employment would be greatest during the exploration and construction (development) phases with a slackening off in numbers of jobs as leases are brought into the production phase. In an area where there is unemployment and/or underemployment in the types of employment generated by OCS development, employment increases would be beneficial to the region.

OCS development is also expected to result in capital expenditures for offshore and onshore development. These expenditures stimulate production in equipment and fabricating industries. Secondary demand is created by the increase in production and income in those industries meeting OCS requirements. The market for petroleum equipment extends beyond the adjacent onshore area. Fabrication of platforms, for example, may occur in other areas of the U.S., such as the Gulf States, or in overseas locations.

Changes in the demographic characteristics of an area are usually closely associated with changes in the economy. Population increases result if there is net in-migration to an area of persons seeking OCS-related employment. The magnitude of change is dependent upon the mix and amount of employment generated by OCS development. Although OCS development projects are not usually labor intensive, they are often filled by transient workers because of the short duration of employment and/or the special skills required. Transient workers who decide to remain permanently in the area may change the composition and size of population. As time goes on, however, the local labor participation rate should increase.

Changes in employment and population may change the existing economic base in a region. Economic change and growth may create additional demand for public and private community services and facilities such as schools, health care, housing, police and fire protection and public utilities. Because there are

lags in the system, temporary shortfalls could possibly occur, causing crowding and congestion and decreasing public welfare. If industrial onshore development does occur, the property tax base could increase sufficiently to provide for increased public expenditures. The extent of impacts would be less in an area that has a large economic base.

The analysis of impacts expected to occur as a result of the proposed action uses the Harris Model as the source for changes expected to occur in population size and composition, the general economy and the public sector. POCS Technical Paper No. 68-3 (Dowling, 1981) discusses the inputs that were developed for the Model and the results of the Model. Sections C.11, 12 and 13 of this chapter contain a summary of the Model results. Impacts of deletion alternatives are based on modifications of the Harris Model results based on proportionate changes in the resource base.

Quantification given in this analysis represents aggregate county-level changes. Analysis of impacts based on county-level changes may not reveal impacts occurring to particular communities. It is unlikely that changes will be evenly distributed throughout the county. However, impact analysis at the community level is not done due to the uncertainties concerning the outcome of the lease sale, the resource base and future economic and political conditions.

B. Effects of the Physical Environment on Oil and Gas Operations

1. Geology: Oil and gas operations could be affected by geological phenomena or conditions. The primary ones are: sea floor instability, shallow gas, oil and gas seeps, and seismicity and faulting. Section III.A.1.b describes these in detail.

The remainder of this section will discuss structural design for seismic events. The state-of-the-art of structural design for seismic events has advanced substantially during this past decade. Design is performed for two levels of a seismic incident - an operational level and a safety level. Design for an operational event is safety that the structure suffers no damage. At the safety level, damage to and deformation of the structure may occur, but there will not be collapse.

Determination of the acceleration forces to which the structure may be subjected is made by calculating the magnitude of the maximum probable and maximum credible earthquake likely to be generated by faults in the vicinity of the structure.

Bedrock acceleration at the site of the structure is related to the magnitude of an earthquake and its distance from the location. Bedrock acceleration is affected by the character of the overlying soils. In most instances, the overlying soils tend to reduce the forces of acceleration applied to the structure, but in rare cases can amplify it. Once the seismic forces to which a structure may be subjected have been established, the structure is designed to withstand those forces.

Seismic activity, as such, has little effect on pipelines that are free to move. An unconfined pipeline has sufficient flexibility and elasticity that

nominal seismic movement has little effect on the integrity of the pipeline. However, if the pipeline is buried the inherent flexibility and elasticity of the pipeline may be reduced to a point that damage is incurred.

Pipelines that cross potentially active faults that reach the surface require special consideration. Geophysical examination of the shallow portion of a fault trace may provide information on the date of the latest movement of the fault. In the absence of proof of recent activity at the tract of a fault, potential damage to the pipeline can be eliminated or minimized by crossing the fault tract in such a manner that the flexibility and elasticity of the pipeline are increased.

2. Physical Oceanography: The physical oceanographic forces of currents and waves are believed to pose no threat to the physical integrity of drilling rigs or production platforms used in the Southern California Bight. Oil and gas structures have been engineered to withstand the maximum expected currents, which are less than 50 cm/sec in the lease sale area, and also the 100-year expected storm waves, which are less than 12 meters in the area. Storms and the associated waves may cause cessation of some activities on rigs and platforms because of danger to personnel transfer from shore boats or the danger and spill hazards involved in off-loading oil from platforms to tankers (if this method of transportation is selected). This is only expected to occur in seas of 3 meters or greater (personal communication by Exxon Hondo platform personnel). Bottom currents are not expected to affect the transportation of oil and gas by pipeline.

3. Meteorology: The Southern California coastal waters experience a high frequency of low clouds and restricted visibilities that could occasionally hinder operations on the OCS. In general, visibility of less than 1 mile occurs on less than 7 percent of all days. Maximum duration of these restricted visibilities is less than 14 hours; thus, extended delays in vessel access of OCS operations is highly unlikely.

Because of its latitudinal position and the influence of the ocean and the Pacific high-pressure system, the Southern California coastal area seldom experiences major hurricanes, tornadoes, freezing conditions or other types of severe weather. Tornadoes, for example, have an estimated return period ranging from 20,000 to 260,000 years. Thus, no significant meteorological effect on operations are expected, although occasional storms and fog could cause temporary interruption of activities.

C. Environmental Impacts of the Alternatives

1. Water Quality

a. Alternative 1: The water quality of the offshore areas of the general lease sale region (Outer Banks, Outer Basins) is good. The water around the Channel Islands and Tanner-Cortes Banks remains relatively unaffected by impacting agents with the exception of elevations in some trace metals (both suspended particulates and benthic sediments) (State of California Mussel Watch, 1980; BLM Southern California Baseline Study Year I, Benthic Vol. II; see Section III.A.3 of this EIS), above sea water levels found in the areas north of Point Conception. Water quality nearshore (Inner Shelf, Inner Basins), especially adjacent to the major urban centers and sewage outfalls, is degraded to varying degrees (SCCRWP, 1979-1980 annual report, BLM Southern California Baseline Study, Benthic, Year I, Vol. II).

The agents which can affect water quality are discharged drilling muds, drilling cuttings, formation water, sewage, and spilled oil. The volumes, probable sources, and characteristics of these were discussed in Section IV A.5.a and additional discussions may be found in Sale FEIS Nos. 48 (USDI, 1979) and 53 (USDI, 1980a). Each agent is discussed separately below. The reader should keep in mind that the assessment of the degree of impact may be different for the areas near platforms than for the entire Proposed Sale No. 68 region and that long-term impacts assessment may be different than that for short-term (acute) impacts. Additionally, the assessment of the degree of impact for the various agents for Proposed Sale No. 68 alone may be different than the assessed degree of impacts from agents from all previous Lease Sales and this Sale considered together (cumulative impacts). The discussions following attempt to make these distinctions clear.

Degradation of water quality around platforms and exploratory rigs due to drilling muds may be manifested as increases in turbidity and increases in chemical oxygen demand. The areal extent of this degradation is of some concern and depends on the conditions under which the muds are discharged. Drilling muds and cuttings discharged into the water column separate into two relatively distinct plumes: an upper plume containing liquids and finer silts and clays; and a lower plume containing the bulk of the discharged solids, cuttings and caked or flocculated muds (Ray and Shinn, 1975; Ayers, et al. 1980). Field and modeling studies (summarized in Dames and Moore, 1981) have shown that in areas of relatively slow currents, 21 cm/sec., the majority of materials discharged settle out from the lower plume within 1,000 m. Suspended particles of the upper plume settle out at greater distances (not specified) or may be dispersed to undetectable levels in the water column. Light transmittance seems to be the only variable affected by the finer muds at distances beyond several hundred meters from the discharge point and this reaches near normal ambient levels between 1,500 and 2,000 meters from the discharge origin. The above field study results were based upon a maximum rate of discharge of 1,000 barrels per hour (389 barrels discharged in total) and higher rates or larger volumes could cause the plume to extend. However, this rate and volume is typical of mud discharges on the OCS. Another factor in addition to rates of discharge which may affect plume dispersion is density stratification. Depending upon where the muds are discharged, above or below the pycnocline, the fine clays and silts could be supported above the stratified layer causing the extended plume sometimes seen in calm ocean conditions.

The above discussion indicates that the impact on water quality from drilling muds should be limited to the area around rigs and platforms with a radius of 1,000 to 2,000 meters. This impact is believed to be insignificant for the entire Proposed Sale No. 68 area considered as a unit but has moderate impacts in the area around the discharge point. The short-term impacts of drilling muds likewise are insignificant for the entire area but moderately significant around the rigs and platforms during periods of discharge. The long-term fate of discharged muds is unknown but probably is similar to the fates of other sediments in the Bight with some probability of ultimate transport into the basins or off the Borderland via submarine canyons. These impacts should pose no significant problems to high energy areas such as the Inner or Outer Banks subareas due to energetic scouring by wave or current action. Thus, water quality is not expected to be degraded to any significant degree except for short-term near discharge points in these areas from this lease sale activity (see however cumulative effects section below).

A second area of concern regarding drilling muds revolves around the toxicity of muds to marine organisms. While this impact by muds is not water quality per se it will be treated briefly here and the reader is also referred to the discussion in the FEIS for Sale No. 53 (USDI, 1980a). Extensive laboratory testing (short-term 96 hr. bioassays mostly) has indicated that the majority of drilling mud components (the clays, barite, bentonite) are relatively nontoxic chemically with LC_{50} values in the 10,000 ppm range or greater (Carls and Rice, 1981; numerous papers in Lake Buena Vista Drilling Fluids Symposium, 1980). While most of the acute (short-term 96 hr.) testing has indicated low toxicity from whole used drilling muds, several papers (Rubinstein, 1980; Conklin, Doughtie and RAO, 1980) testing for longer periods have shown LD_{50} toxicities less than 1,000 ppm and some below 100 ppm. These experiments⁵⁰ which indicate toxic muds may have used drilling muds with elevated levels of trace metals which may account for the toxicity. Some evidence for uptake of trace metals (e.g. chromium, lead, and zinc) from muds has been demonstrated in marine organisms (Neff, et al. 1980; McCulloch, Neff, and Carr, 1980) but some of these organisms are able to depurate (cleanse themselves of) the metal when returned to clean sea water.

The significance of the impact of trace metals in drilling muds remains clouded at this time. The National Academy of Sciences Marine Board Assembly of Engineers is currently reviewing the research on muds in order to perhaps resolve some of the controversy surrounding the toxicity of drilling muds. Evidence to date seems to point to the conclusion that short-term toxicity of the major components of muds are low (major components are therefore relatively safe). The problems of significant toxicity (short-term) seem to be related to trace metal contaminants of muds (mercury is known to be present in mud discharged from one well in the arctic; Crippen and Hood, 1980) and the bio-availability of most of these metals contaminants is thought to be limited on a short-term basis. The long-term significance of trace metal contaminated mud toxicity is poorly understood at this time. Based upon the geochemistry of most metals, their tendency to be tightly complexed with clay minerals in the muds, and their relative insolubility in sea water one might expect low toxicity of even contaminated muds over long periods. (See Section III.A.3) As mentioned above, these mechanisms are not well understood for long-term

chronic exposures and remain a question for research. It is felt that because of dilution of muds (and therefore trace metals) within a few meters (500:1 at 3 meters; 10,000:1 at 100 m; Ray and Meek, 1980) coupled with the short exposure times of transient plankton or nekton organisms minimal impacts to the pelagic fauna and flora would result. The exceptions to this case are for fish which might congregate around platforms and be exposed to low rate continuous discharges and intermittent high rate discharges and any plankton entrained in the plume at the downpipe during bulk discharges. Impacts on these organisms could be significant for pollutant uptake but no research has been attempted to examine this.

Drill cuttings should cause no degradation of water quality in any of the lease sale areas but could have a significant impact in smothering bottom organisms near the rigs and platforms and in changing the sediment characteristics in these areas. After being washed free from oil contamination, cuttings are discharged and fall to the bottom beneath the platform even more quickly than the lighter muds. Studies on the Tanner Banks (Ecomar, 1978) indicate that cuttings would settle predominantly within 150 m of the discharge point but that the smallest cuttings could settle up to 2,500 m away. Visual inspection around the Tanner Bank drilled area revealed no accumulation of cuttings but microscopic examination of sediments did show some cuttings present. These results are consistent with results reported from Galveston (Shinn, 1974), Louisiana (Veking, no date), Georges Bank (Dames and Moore, 1981) but not with results from Gulf of Mexico (Zingula, 1975) or the mid-Atlantic C.O.S.T. well (Menzie, et al. 1980). Cuttings may be mixed vertically in the sediments beneath platforms (Houghton, 1980). The cumulative effects of cuttings for all previous lease sales and Proposed Sale No. 68 are discussed in Section IV.C.1.c

The degree to which the smothering and sediment characteristic altering impacts of cuttings may be significant depends on local physical variables (depth, current, wave regimes, substrate type, etc.) and on the volumes of cuttings discharged. In very dynamic areas, in situ sampling has shown very little affect on benthos beyond 100 m from the platforms (Zingula, 1975; Menzie, et al. 1980; Mariani, et al. 1980). Motile epifauna (including demersal fish) are unlikely to be smothered but the physical changes caused by cuttings could preclude use of the bottom in the area affected by some types of organisms. This latter effect would be severe in rocky hard bottom areas. The presence of significant amounts of cuttings and mud (especially the latter) altering the characteristics of surficial sediments could be expected to have significant adverse effects on the existing infaunal communities. Thus, the short-term near platform impacts of cuttings (and muds) are expected to be moderate to high while the long-term effects both near platforms and rigs and for the entire lease sale considered as a unit are expected to be minimal. The exception to long-term minimal impacts would be in rocky hard bottom habitats (coral areas of Tanner-Cortes Bank) where moderate impacts to high impacts could occur depending upon wave conditions and currents.

Formation water discharged into the marine environment will have moderate to minimal impacts on water quality proportional to the distance away from the discharge point. Formation water with elevated salinity, oil and grease, and trace contaminants (See Table IV.A.5.a-4 and Table IV.A.5.a-5) would be diluted

by a factor of 1,000 at a distance of 0.5 km from the point of discharge (Dickey, 1980). The range of values of pollutants associated with formation water would exceed EPA effluent limitations for 30 day consecutive average oil and grease (limit 48 mg/l, high range 359 mg/l) requiring treatment to remove excess oil.

To examine potential problems caused by trace constituents in formation water, the upper limit values listed in Table IV.A.5.a-5 have been divided by 1,000 to obtain the estimated maximum ocean water concentrations predicted 0.5 km downstream of a platform. These values are presented in Table IV.C.1.a-1. Also shown for comparison are available values for EPA's recently published water quality criteria (Federal Register, 1980). For those contaminants for which such criteria are not available, the lowest appropriate aqueous concentration at which an effect has been reported (FR, 1980) are listed.

This comparison shows that the two formation contaminants whose estimated maximum seawater concentrations following 1,000-fold dilution most closely approach EPA's maximum allowable levels (24-hr average) are mercury and cadmium and these estimated maximum concentrations fall below the criteria by factors of about 12 and 25, respectively. In the case of the five contaminants for which seawater quality criteria have not yet been established (arsenic, lead, silver, cyanide, and phenolic compounds), the estimated maximum concentrations following 1000-fold dilution are 2-3 orders of magnitude below the lowest seawater or freshwater concentrations yet reported to have a detrimental biological effect.

The impacts of formation water will probably be less than predicted by dilution factors based on Dickey's model because the model assumes no chemical reactions of trace elements in seawater. Impacts from formation waters should be short-term and restricted to less than 0.5 km from platforms; a radius of effect inside of which impacts on water quality and possible impacts to biota are expected to be moderate and outside of which impacts will be minimal. Short-term impacts to the entire Proposed Sale No. 68 area considered as a unit should be minimal from formation water. Long-term localized and area wide impacts are not well understood at this time. Cumulative formation water impacts are discussed in Section IV.C.1.c.

Domestic sewage from oil and gas activities in the Bight may have slight short-term impacts in the water immediately adjacent to rigs and platforms. Impacts could be elevated bacterial counts and slight increases in nitrate and BOD (biological oxygen demand). Total impacts in each subarea and the entire region should be minimal since the daily volume of sewage to be discharged are very small given the dilution factors around the platforms and rigs and given the treatment required by NPDES permits and OCS Order No. 8.

The minimal impacts from the agents discussed above are even less likely than indicated because of operating procedures now in use in the OCS areas off California. Drilling muds are commonly reused in many wells and, if oil-based muds are needed, they are not discharged to the environment. Drill cuttings may be barged to onshore disposal facilities in biologically sensitive areas thus avoiding any contamination of fragile bottom habitats. Formation water is usually reinjected into the oil bearing strata and does not pollute the surrounding water mass.

TABLE IV.C.1.a-1

COMPARISON OF ESTIMATED MAXIMUM SEAWATER CONCENTRATIONS OF TRACE
CONTAMINANTS FOLLOWING 1,000-FOLD DILUTION OF CALIFORNIA OFFSHORE
PRODUCED FORMATION WATER WITH EPA WATER QUALITY CRITERIA
OR LOWEST REPORTED CONCENTRATION OF EFFECT (FEDERAL REGISTER, 1980).
ALL VALUES IN g/LITER.

<u>Trace Constituent</u>	<u>Estimated Maximum Conc. after 1,000-fold dilution</u>	<u>EPA 24-hr Criteria</u>	<u>Lowest Reported Conc. of Effect</u>
Arsenic	0.08	NE ¹	40 ²
Cadmium	0.18	4.5	
Total Chromium	0.04	18	
Copper	0.116	4.0	
Lead	0.28	NE ¹	25 ³
Mercury	0.002	0.025	
Nickel	0.29	7.1	
Silver	0.03	NE ¹	2.3 ⁴
Zinc	3.2	58	
Cyanide	0.004	NE	2.0 ⁵
Phenolic Compounds	2.10	NE	2560 ⁶

¹ Saltwater criteria for 24-hour average not established.

² Short-term effect, freshwater species.

³ Chronic effect, saltwater species.

⁴ Maximum allowable (instantaneous) saltwater concentration.

⁵ Projected chronic effect, saltwater species.

⁶ Chronic effect, freshwater species.

The effects on water quality and marine biota from spilled oil and the degree to which these effects are felt depend on many variables including the volume of oil spilled, the type of oil, the degree of weathering, and the location of the spill and timing of the spill with season, tide, winds and currents. The specific effects of spilled hydrocarbons on marine organisms are discussed in Section IV.A.1.c. There are statistically 1.1 spills greater than 1000 barrels expected from this lease and subsequent development. The possible impact on water quality from the expected spills is difficult to predict with accuracy but data from the 1969 Santa Barbara Channel oil spill suggest that the effects should be short lived in open ocean or open coastal environments (Straughan, 1971). The areal extent of impact will be related to the volume of oil spilled but would not be significant if the entire Proposed Sale No. 68 area is considered as a unit and only 1000 barrels is spilled. Degradation of water quality would be severe on a localized (along several kilometers of beach) basis with a spill of this magnitude reaching shore (based on Texas Coast studies of Ixtoc I well blowout effects; API, 1981 Oil Spill Conference). The exception to localized short-term impacts could occur from oil becoming trapped in sediments, being covered by summer sandy beach accretion, and subsequently uncovered the following winter season. The effects in this case would still be local but of longer duration (perhaps several seasonal cycles before complete disappearance of oil in sediments). The important exceptions to the generally short-lived impacts of most of the Proposed Sale No. 68 area would occur in wetlands or estuaries (such as Anaheim Bay, Upper Newport Bays, Ballona Creek, Malibu Creek, and Tijuana Estuary). Oil migrating into these sensitive shallow water habitats would produce severe impacts by reducing oxygen content of the water, increasing chemical oxygen demand, decreasing light transmittance, and significantly elevating toxic compound levels in the water column. The toxic compounds of concern are primarily the lighter fractions of crude oil, which tend to evaporate rather quickly, and trace metals such as mercury which has been detected in high concentrations in some California crude oils (see Table IV.C.1.a.-2).

b. Conclusions: Proposed Sale No. 68 should present no significant short-term threat to water quality in the southern California marine environment when the entire area is considered as a unit. Moderate short-term water quality impacts will likely occur locally around rigs and platforms (1000 m to 2500 m). Moderate short-term water quality degradation could occur on a larger scale (several kilometers estimated) in sensitive areas such as Tanner-Cortes Banks but short-term and long-term impacts from this Sale should be minimal in nearshore areas subject to other dominant pollution sources. Severe water quality degradation would occur in estuaries and wetlands should these be exposed to oil and gas activity discharges from this sale. Long-term local and regionwide impact significance is generally unknown or poorly understood

c. Cumulative Impacts: The cumulative impact of the OCS oil and gas lease sales in southern California (Sale Nos. 35, 48, and 68), coupled with increased municipal sewage discharges and thermal effluent from coastal generating stations, will be manifested as continued degradation of the water quality in the Bight, especially in the nearshore areas. The Santa Barbara Channel may experience significant water quality degradation in the future if projected oil spills should occur adding petroleum hydrocarbons to the natural input from oil seeps and to the anthropogenic sources from onshore facilities, which will continue to expand to meet growing population. The manner in which

water quality degradation will appear is not predictable at this time. Vague indications of general seasonal surface circulation is known, but the spatial scale and time scale of possibly important circulation patterns is not. This, coupled with little subsurface circulation information, does not allow estimation of the residence time of pollutants in the Channel or identification of small scale eddy systems which might trap cumulative pollutants. The Bureau of Land Management plans to fund a study, beginning in 1981, to define the Santa Barbara Channel circulation. Until this is done, the cumulative effects of oil and gas activity and other pollutant contributing activities on water quality remains uncertain. In addition to the problems of predicting cumulative pollutant transport and water quality effects is the uncertainty of the indirect cumulative effects of possible water quality degradation on marine life in the region. Some knowledge is available (Spies and Davis, 1979; Spies, Davis and Stuermer, 1979) on communities located near oil seeps in the Santa Barbara Channel and the recovery of biota following the Santa Barbara oil spill in 1969 (Straughan, 1971). However, critical information regarding community structure and population dynamics of individual species prior to and after hydrocarbon impacts remains elusive.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale. For example, if Military Stipulation No. 1 is not adopted, there is a small possibility that communication gaps could arise between the oil and gas industry and the military resulting in impacts on oil and gas structures from military activities. These impacts could result in an increased potential and number of oil spills. Also, if the Geological Stipulation is not adopted, there is a slight possibility that an unidentified geohazard could result in an oil spill. However, existing regulations are expected to adequately mitigate any potential impacts from geohazards. If the Transportation of Hydrocarbon Products Stipulation is not adopted, there is a small possibility that barging of oil may occur when piping it to shore would be feasible. Since barging oil poses a greater risk than piping, there could be an increased potential for oil spills and an increase in the number of oil spills expected to result from the Sale. Oil can reduce oxygen content, increase chemical oxygen demand, decrease light transmittance and elevate toxic compound levels in the water column. Therefore, the small increase in oil spills noted above would increase slightly the likelihood for moderate short-term water quality degradation in localized areas, and would increase slightly the potential for severe water quality degradation in estuaries and wetlands.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill cleanup

and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. The impact on water quality should Alternative 2 be adopted would be reduced in the Channel Islands National Marine Sanctuary lease tracts. However, the impact on water quality for the lease sale area considered as a whole would be substantially the same as described under Alternative 1 because Alternative 2 anticipates no change in the total number of wells or platforms for the Sale.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Alternative 3 would have effects similar to Alternative 2: a reduction of the impact on water quality in the tracts located in the Santa Barbara Channel Ecological Preserve Buffer zone compared to Alternative 1 impacts. Alternative 3 impacts on water quality would be substantially the same as Alternative 1 for the entire lease sale area for the reason given above.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Alternative 4 would reduce water quality degradation in the tract area adjacent to Santa Monica Bay, in water around Catalina and Anacapa Islands (as a result of reducing probabilities of spills reaching those waters), and in Santa Monica Bay. As in the other alternatives discussed above, impacts to water quality for the entire lease sale area will not be significantly changed from the impacts described in Alternative 1.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Alternative 5 would not significantly reduce water quality impacts either locally or lease sale areawide. Local water quality impacts would not be significantly reduced because of adjacent tracts already leased and anticipated for development. The deletion of one tract would not change the number of wells or platforms anticipated for the Sale.

Alternative 6 (Cancel) or 7 (Delay) to the proposed action would either eliminate all impacts to water quality from this Sale (6) or merely delay (7) the impacts as described under Alternative 1. Technological advances, in the case of Alternative 7, could result in reduced impacts if the Sale was held later.

TABLE IV.C.1.a-2

TRACE ELEMENT CONTENTS OF 6 CRUDE OILS³

Elemental Conc (u g/g) ^b	RF-1	RF-2	RF-3	RF-4	RF-5	RF-6
Ni	93.5	113.0	78.6	116.8	1.25	20.5
V	7.5	6.0	4.9	112.0	26.0	8.2
Co	12.7	13.9	14.5	0.198	0.001	0.0354
Hg	21.2	1.49	1.46	0.139	0.0143	0.0898
Fe	73.1	77.2	89.5	36.9	5.0	4.94
Zn	9.32	19.50	19.60	2.619	0.0907	9.08
Cr	0.634	0.685	0.729	0.380	0.1	0.081
Mn	2.54	3.10	2.96	0.21	1.50	0.79
As	0.656	1.63	0.67	1.20	0.2	0.0773
Au	2.8×10^{-6}			3.0×10^{-6}	10^{-7}	6.4×10^{-5}
Sb	0.0517	0.061	0.11	0.273	10^{-3}	0.055
Se	0.364	0.454	0.333	0.360	0.009	0.128
Sc	8.8×10^{-3}	9.0×10^{-3}	4.6×10^{-3}	4.4×10^{-3}	9.5×10^{-5}	10^{-5}
Cu	0.93	1.25	1.13	0.21	0.2	0.10
Na	11.1	65.2	15.5	25.0	1.0	13.0
Ca	192.0	75.1	103.0	150.0	20.0	20.0

^aOils RF-1, 2, 3 from California; RF-4, Venezuela, Louisiana and RF-6, Libya

^bConc = concentrations in ppm

From Filby and Shah (1971)

2. Air Quality

a. Alternative 1: Effects of Proposed Sale No. 68 activities on onshore air quality levels have been estimated through the use of computer simulation modeling. The modeling is based upon the emissions estimates and available data on ambient air quality and meteorology. Complete details of the modeling input parameters and methodology are discussed in POCS Technical Paper No. 81-7 (Environmental Resources Group, 1981).^a

Two types of models were employed: 1) EPA-approved Gaussian models for the inert pollutants (NO₂, SO₂ and CO); and 2) RAPT (Reactive Air Pollutant Transport) model for photochemically reactive pollutants such as ozone. RAPT is a trajectory-type model developed specifically for use on the OCS and near-shore areas. This model makes predictions of pollutant concentrations along a path determined by the wind flow. The Gaussian models are modified to account for dispersion conditions on the OCS. Pollutant concentrations are predicted on a receptor grid.

Gaussian models can estimate concentrations within a factor of two when emissions and meteorological impacts are known with high precision. In general practice, results are much poorer and can be in error by an order of magnitude. Worst case analyses were used to minimize the likelihood that impacts will be underpredicted. The worst case assumptions for key analytical parameters are given below.

Impact Modeling Assumptions. The uncertainty in key parameters, such as locations, number of sources, emission rates, production schedules, routing of products, etc., has necessitated a worst case analysis. This method provides estimates of reasonably expected upper limits and reduces the likelihood that impacts will be underpredicted.

The major worst case assumptions used in this analysis are:

- Maximum emission rate developed by assuming simultaneous operation of likely OCS-related emission sources. The lowest degree of emission control required by DOI's National Air Quality Regulations was assumed for facilities on the OCS, while facilities on shore are assumed to meet Best Available Control Technology as required by the Local Air Pollution Control District. It should be noted that DOI is required to impose additional pollutant control requirements on sources that either individually or cumulatively cause exceedances of the DOI significance level or the air quality standards. No controls of this nature have been included in this analysis.

^a The proposed development scenario (under Alternative 1) does not assume either of the two estimated Santa Barbara Channel platforms would be placed in the Santa Barbara Marine Sanctuary or the adjunct to the Santa Barbara Ecological Preserve. Thus, the air quality impacts discussed under Alternative 2 or 3 would result from Alternative 1 only if development occurs within the Marine Sanctuary (Alternative 2) or the Santa Barbara Ecological Preserve.

- Adverse meteorological conditions including light wind speeds, direct pollutant transport toward shore and limited mixing rate for short averaging time predictions.
- Most adverse combination of published stack and design parameters (i.e., stack height, gas temperature, effluent exist velocity, etc.).
- No absorption of NO_x and SO_x by the ocean surface is assumed even though some of these pollutants may become dissolved in water.

The combining of these worst case assumptions probably results in an overestimate of potential impacts. More refined impact evaluations will be prepared when detailed project-specific information is available. This evaluation cannot take place until the development plan phase. The intent of this worst case analysis is to identify potential problem areas and to evaluate possible cumulative impacts of Proposed Sale No. 68. It should be noted that for a typical situation, Proposed Sale No. 68 impacts are expected to be much less than those discussed herein. Also, identified impacts are for the peak emissions year. Under the projected development scenario, emissions would decrease an average of nearly 50 percent within 5 years after the peak emission year.

Maximum Inert Pollutant Concentrations. The predicted maximum annual average concentrations for NO_2 , SO_2 and TSP are presented in Table IV.C.2.a-1. As Table IV.C.2.a-1 indicates, Proposed Sale No. 68 offshore activities will result in onshore NO_2 , SO_2 and TSP increments well below the $1 \mu\text{g}/\text{m}^3$ level considered significant by D01. The predicted concentrations are also far below the Class I Prevention of Significant Deterioration (PSD) increments that may be required in Channel Islands National Park. The concentration increments for the projected gas plants in the Santa Barbara Channel and Inner Banks zones are, also, well below the D01 and PSD significance levels.

Maximum inert short-term average concentrations are presented in Table IV.C.2.a-2. The short average concentration from Proposed Sale No. 68 sources range from 3 to $9 \mu\text{g}/\text{m}^3$ for NO_2 , from negligible to $10 \mu\text{g}/\text{m}^3$ for SO_2 and from negligible to $5 \mu\text{g}/\text{m}^3$ for CO. These maximum SO_2 , NO_2 and CO impacts are within the increments allowable under the D01 air quality regulations. However, short-term development phase increments range from $9.7 \mu\text{g}/\text{m}^3$ to $44 \mu\text{g}/\text{m}^3$ for NO_2 , $0.1 \mu\text{g}/\text{m}^3$ to $10.3 \mu\text{g}/\text{m}^3$ for SO_2 , 3.7 to $6.5 \mu\text{g}/\text{m}^3$ for CO, and $0.4 \mu\text{g}/\text{m}^3$ to $12 \mu\text{g}/\text{m}^3$ for TSP. The impacts of any onshore gas processing plants on short-term pollutants are highly dependent on plant location and local topography and, thus, have not been modeled here. Similar-type plants in other areas have been able to meet all applicable air standards.

Maximum Ozone Concentrations. The first task in the photochemical modeling was the selection of probable pollutant trajectories during worst case conditions. In general, the trajectories were selected on the basis of observed meteorological patterns during days of high measured ozone concentrations. In areas with limited meteorological data available, hypothetical worst case trajectories were constructed.

TABLE IV.C.2.a-1

SUMMARY OF HIGHEST COMPUTED ANNUAL AVERAGE ONSHORE CONCENTRATIONS

Zone	Highest Onshore Concentrations (mg/m ³) From						Future Predicted Onshore Concentrations ³		
	Offshore Activities			Onshore Gas Plant ²			(Concentrations without Project/ Concentrations with Project) mg/m ³		
	NO ₂	SO ₂	TSP	NO ₂	SO ₂	TSP	NO ₂	SO ₂	TSP
Santa Barbara Channel	0.30	0.03	NEGL.	0.1	0.02	NEGL.	71/71.1	18/18.03	64.5/64.5
Inner Banks	0.56	0.09	NEGL.				71/71.4	24/24.1	52/52
Outer Banks	NEGL.	NEGL.	NEGL.				56/56	8/8	69/69
National AAQS ⁵	100	80	75	100	80	75			
California AAQS ⁵			60			60			
DOI/PSD increments ⁶		2/20	5/19		20	19			
DOI significance levels ⁷	1	1	1						

1. Concentrations as calculated by the CDM model are for peak emissions transportation scenario.

2. The gas processing plant is hypothesized under Alternative 1.

3. Numbers indicate measured 1979 annual average concentration at the point of predicted maximum Sale 68 impact. Actual 1991 concentrations will likely be lower.

4. Numbers indicate measured 1979 pollutant concentrations at the point of predicted Sale 68 impact. Actual 1991 concentrations will likely be lower.

5. National and California Ambient Air Quality Standards (AAQS).

6. DOI and EOA PSD maximum allowable increments. The smaller DOI increments are for assessing the potential Channel Islands Class I area near the Santa Barbara Channel tracts.

7. DOI and EPA significance levels applicable to an onshore area in attainment of the national AAQS. Onshore areas not in attainment of the AAQS may not be impacted by OCS activities.

TABLE IV.C.2.a-2

SUMMARY OF HIGHEST COMPUTED SHORT-TERM AVERAGE ONSHORE CONCENTRATIONS FROM OFFSHORE PRODUCTION ACTIVITIES¹

Zone	Concentrations (µg/m ³) and Averaging Periods								Future Predicted Onshore Concentrations ⁴			
	NO ₂ (1hr)	SO ₂			TSP (24hr) ³	CO			(Without Project/With Project)			
		(1hr)	(3hr) ²	(24hr) ³		(1hr)	(8hr) ²	(12hr) ²	NO ₂ (1hr)	SO ₂ (24hr)	TSP (24hr)	CO (8hr)
Santa Barbara	6	1	1	NEGL.	NEGL.	2	2	2	319/325	209/210	156/156	1,500/1,502
Inner Banks	9	10	10	5	NEGL.	3	3	3	469/478	183/188	139/139	18,000/18,003
Outer Banks	3	NEGL.	NEGL.	NEGL.	NEGL.	1	1	1	563/566	287/287	163/163	21,000/21,001

National AAQS ⁵			1,300	365	150	40,000	10,000					
California AAQS ⁵	470	1,310		131	100	46,000		10,000				
DOI/PSD increments ⁶		25/512	5/91	10/37								
DOI significance levels ⁷			25	5	5	2,000	500					

1. Concentrations are in $\mu\text{g}/\text{m}^3$, as calculated for one-hour averages (or otherwise as noted) using the PT series of EPA-approved Gaussian Models (US EPA, 1978).
2. Specified concentration equals the computed one-hour average concentration. This assumes that the wind holds steady throughout the specified averaging period, which is an unlikely worst case.
3. The 24-hour average computed concentration assumes that the wind holds steady in speed and direction for 12 out of 24 hours. (During the remaining 12 hours the wind is assumed to shift offshore, or otherwise change direction.)
4. Numbers indicate measured 1979 pollutant concentrations at the point of predicted Proposed Sale No. 68 impact. Actual 1991 concentrations will likely be lower.
5. National and California Ambient Air Quality Standards (AAQS).
6. DOI and EOA PSD maximum allowable increments. The smaller DOI increments are for assessing the potential Channel Islands Class I area near the Santa Barbara Channel tracts.
7. DOI and EPA significance levels applicable to an onshore area in attainment of the national AAQS. Onshore areas not in attainment of the AAQS may not be impacted by OCS activities.

The constructed trajectories, and their associated meteorological, air quality and non-OCS emissions data, were then modeled to generate an ozone baseline for comparison of simulated and observed ozone onshore. Modeling is in terms of 1-hour averages to correspond with the air quality standard for ozone. Baseline non-OCS emissions were then adjusted to account for anticipated conditions during the peak years of Proposed Sale No. 68 activities as documented in State Implementation Plan documents. Constructed cases of worst-case OCS emissions were then developed and appropriate OCS emissions introduced into the baselines and rerun. The difference in predicted ozone concentrations with and without Proposed Sale No. 68-related development represents the simulated ozone increment due to the proposed action.

Fourteen cases involving operational emissions were run. Ozone increments varied from none through 2.1 parts per hundred million (pphm) (Federal Ozone Standard is 12 pphm). Most increments were less than 0.1 pphm. Table IV.C.2.a-3 summarizes simulated baseline ozone, Proposed Sale No. 68 simulated ozone levels and simulated points of maximum ozone concentrations. All cases assume worst-case meteorology insofar as it could be determined from available data. It is estimated that worst-case meteorology, as used in the study, can occur several times during the summer off each OCS zone. Highest ozone increments resulted from the hypothetical trajectories applied to modeling the Ventura and South Coast areas. All increments in the San Diego and Santa Barbara area were negligible. Based upon an examination of the photochemical modeling results, it appears that Proposed Sale No. 68-related ozone precursors are not emitted in a proportion favorable for formation of photochemical oxidants. For significant ozone impacts to occur, substantially greater emissions of reactive hydrocarbons would need to be present in the vicinity of OCS-related sources. Further, it was found that, due to the use of an erroneous emission factor, hydrocarbon emissions associated with production power generation were overestimated in the air quality analysis study (POCS Technical Paper No. 81-7 Environmental Resources Group, 1981). The revised annual emissions are shown in Table IV-A.5.b.ii-1. This reduced hydrocarbon emission would not affect the high incremental ozone concentrations associated with South Coast trajectories II-A and B, and Santa Barbara trajectory II. The major source of volatile hydrocarbons for these trajectories is barge loading. Power generation hydrocarbon emissions are only 10 percent of total emissions. However, the reduction in VOC emissions would cause a decrease in predicted onshore ozone concentration for other trajectories. Therefore, the ozone concentration shown in Table IV.C.2.a-3 should be considered as conservative estimates of ozone concentrations that could result from the Proposed Sale No. 68 activity.

b. Conclusions: Proposed Sale No. 68 production activities, of themselves, are not expected to cause violations of any State or National Ambient Air Quality Standard in those areas already attaining standards. However, Proposed Sale No. 68 activities could further deteriorate air quality in nonattainment areas.

c. Cumulative Impacts: Southern California has what many consider to be the most severe air pollution problem in the nation. Ozone standards are violated on an almost daily basis. In addition, air quality standards for NO₂, TSP and CO are violated frequently. During the peak emission

TABLE IV.C.2.a-3
SUMMARY OF OZONE IMPACT RESULTS¹

Trajectory	Peak Year Ozone Levels (1991)		
	Future Concentration ² Without Proposed Sale No. 68	Maximum Proposed Sale No. 68 Increment	Cumulative Increment of OCS Development since 1978
Santa Barbara I	26	NEGL. ³	NEGL.
Santa Barbara II	25	NEGL.	NEGL. to 2.1
Santa Barbara III	12	NEGL.	NEGL. to 0.3
Ventura I	15	NEGL.	NEGL.
Ventura II	19	0.2 to 0.4	NEGL.
Ventura III	12	NEGL. to 0.4	NEGL. to 0.2
South Coast I	48	NEGL.	NEGL. to 0.2
South Coast IIA	31	NEGL. to 2.1	0.3 to 2.3
South Coast IIB	31	NEGL. to 0.9	0.1 to 1.2
South Coast III	48	NEGL.	NEGL.
South Coast IV	20	NEGL.	NEGL. to 0.2
San Diego I	22	NEGL.	NEGL.
San Diego II	27	NEGL.	NEGL.
San Diego III	17	NEGL.	NEGL.

1. Levels in parts per hundred million (pphm; 100 pphm=1 ppm) of ozone. California State, and national, 1-hour standards are 10 pphm and 12 pphm, respectively. These runs modeled various high emissions scenarios. Refer to Technical Paper No. 81-7 (Environmental Resources Group, 1981) for details.
2. Future concentrations are predicted by the RAPT model using projected 1991 regional emissions and measured 1978 offshore pollutant concentrations. Because existing offshore pollutant concentrations were assumed, projected future concentrations are probably overestimated.
3. Increments of less than 0.1 pphm are considered negligible.

year, Proposed Sale No. 68 activities, on a long term basis, would add nearly one half of one percent (0.5%) to existing NO₂, TSP and CO concentrations at the point of maximum impact (see Table IV.C.2.a-1). Worst case ozone, NO₂, TSP and CO impacts for the short-term air quality standards are less than 10 percent and generally less than 1 percent of existing levels. These worst case impacts are considered insignificant exacerbations of an existing condition. SO₂ increments from Proposed Sale No. 68-related sources, in combination with existing levels, are not expected to cause violations of standards.

The cumulative impact of all projected OCS development in the Southern California Bight was also considered in the RAPT modeling. These results show that the cumulative impacts of projected OCS developments through 1991 (including Proposed Sale No. 68 and all previous federal leasing) are not expected to significantly affect ambient air quality onshore. The major contributing factors to this result are: 1) OCS emission sources (both stationary and mobile) are widely separated, 2) emissions from all sources do not occur simultaneously, and 3) pollutants disperse somewhat in the distance between the OCS and the shoreline.

Based upon projected low emissions of visibility reducing substances (mainly sulfates and its precursor SO₂), Proposed Sale No. 68 activities are not expected to significantly affect onshore visibility or odor levels. Odor levels should not be significantly affected since modeling results show H₂S concentrations well below the odor threshold.

A large oil spill could cause a significant increase in ozone levels for a short period, if spill characteristics and meteorological conditions are conducive to ozone formation at the time of the spill. Because the meteorological and spill characteristics are unknown, the magnitude of this potential impact cannot be determined.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional adverse impacts to air quality are anticipated because none of the stipulations bear any relationship to air quality.

The conclusions to Alternatives 2, 3, and 4 were based on the DOI air quality regulations and the analysis of air quality impacts discussed in the Supplemental Report to POCS Technical Paper No. 81-8 (Environmental Resources Group, 1981).

Alternative 2 will not materially alter the air quality impacts discussed under Alternative 1. The only measurable long-term impacts that would not occur, as a result of Alternative 2, are for NO₂ levels associated with possible development within the Channel Island Marine Sanctuary.^a Because the estimated

^a The impacts discussed under Alternative 2 assume air emissions from possible development within the Marine Sanctuary; whereas, the proposed development scenario (under Alternative 1) does not assume either of the two Santa Barbara Channel estimated platforms would be placed in the Marine Sanctuary. Thus, the air quality impact discussed under Alternative 2 would result from Alternative 1 only if development occurs within the Marine Sanctuary.

NO₂ increments would exceed the DOI annual significant level of 1 ug/m³ at 3 miles and 2 ug/m³ at 6 miles from the Channel Islands), the DOI regulation requires application of Best Available Control Technology (BAST) on the NO_x emission source. In lieu of BAST to reduce NO_x emission, emission could be reduced below exemption level.

On a short-term basis, the highest concentration of pollutants would be caused by development activities that may occur within the Marine Sanctuary. Incremental NO₂ concentration would be highest among all pollutants. Although there are no hourly Federal NO₂ standards or DOI significant levels, some estimated one-hour NO₂ concentrations are a significant percentage of the California 1-hour NO₂ standard (ranging from 23 to 35 percent of the standard). This worst-case NO₂ concentration would occur for a few days during the entire development phase. The level of NO₂ occurring during peak production years would be approximately one-fourth of the NO₂ concentration resulting from development. Since background NO₂ concentrations on the Channel Islands were not available, it could not be determined if California 1-hour NO₂ standard of 470 mg/m³ would be violated. DOI does not consider the NO₂ impacts occurring during production and development to be significant.

Alternative 3 would have effects similar to Alternative 2: long-term impacts that would not occur, are for NO₂ levels associated with possible development within the adjunct to the Santa Barbara Channel Ecological Preserve.^a Estimated NO₂ increments (3 ug/m³ at 4.5 miles and 2 ug/m³ at 6 miles), from development in this area, would have to be reduced to the DOI annual significant level. The short-term impacts would be similar to those discussed under Alternative 2. The highest short-term NO₂ concentration of 134 ug/m³, which is estimated to result from development, would not cause a violation of the California one-hour standard.

Alternative 4 would be substantially the same as Alternative 1 for the entire lease sale area. Generally, Santa Monica Bay area air quality degradation, from tracts adjacent to this area, would not occur if Alternative 4 is not selected. If the Santa Monica Bay area tracts are leased, the estimated worst-case short-term NO₂ concentrations were predicted to be 49 ug/m³ and 30 ug/m³, at 22 miles from shore and 35 miles from shore, respectively. These concentrations are between 9 to 6 percent of the California one-hour standard, and 4 to 6 percent of the highest 1979 recorded NO₂ concentrations at the monitoring station closest to Santa Monica (West Los Angeles station). Although these impacts are considered to be insignificant, it should be noted that the South Coast Air Basin is designated as nonattainment with respect to NO_x pollutants, and any additional NO₂ concentrations may be considered as significant by the local air quality control agencies.

Alternative 5 will not materially alter the impacts discussed under Alternative 1.

^a The impacts discussed under Alternative 3 assume air emissions from possible development within the Adjunct to the Santa Barbara Ecological Preserve, whereas the proposed development scenario (under Alternative 1) does not assume either of the two estimated Santa Barbara Channel platforms would be placed in the Adjunct to the Ecological Preserve. Thus, the air quality impacts discussed under Alternative 3 would result from Alternative 1 only if development occurs within the Adjunct to the Ecological Preserve.

Alternative 6 would eliminate all air quality impacts discussed under Alternative 1.

Alternative 7 would delay the impacts discussed under Alternative 1.

3. Plankton

a. Alternative 1: The impact on phytoplankton and zooplankton in the lease sale region will come from drilling muds, formation water (if it is discharged) sewage, and spilled hydrocarbons. These agents and their effects on plankton have been discussed in detail in Section IV.A.1.c. of this document and in past environmental impact statements (USDI, 1975b, 1979, 1980a). The deleterious effects of oil and gas activity on plankton populations, especially oil spills, is felt to be nonsignificant, due to the spatial and temporal variability of plankton in the marine environment (Strickland, 1967; Riznyk, 1977; Balech, 1960). Phytoplankton may experience small blooms in the areas around spills, not within the spills.

The expected number of spills in the lease sale area will not significantly raise long-term hydrocarbon concentrations above present ambient levels (0.1 to 20 ppb) in the Bight. This range is very much below the 0.1 ppm aromatics level which Prouse, et al. (1976) indicates is the concentration at which toxic effects on phytoplankton begin to occur and is in the range in which enhancement of phytoplankton populations is experienced. Thus, blooms of phytoplankton may result at some distance from the spill or at some time after the spill dissipates.

Plankton trapped within spills will experience mortality, but replacement by advected populations should occur rapidly after the oil has dissipated, weathered or transported from the area. Plankton populations should recover quickly once the oil is removed. However, if a massive spill was trapped in an eddy system, such as might occur in the Santa Barbara Channel, it could produce significant impacts on the phytoplankton for a period long enough to affect zooplankton grazing on phytoplankton. Thus, zooplankton populations could be reduced, in turn affecting the carrying capacity of the marine environment for higher trophic levels. This scenario is thought to be unlikely, because the oil and gas formations known in the Proposed Sale No. 68 area and the subarea of Santa Barbara Channel do not seem to have estimated reserves to sustain a massive spill.

b. Conclusions: Oil and gas activities due to Proposed Sale No. 68 are not expected to have a significant impact on plankton populations.

c. Cumulative Impacts: Cumulative impacts on plankton in the Southern California Bight, from all activities discussed in Section IV.A.5.a., may include changes in the plankton species composition in nearshore areas and a general increase in plankton biomass as a result of increased nutrient levels from all hydrocarbon sources. The changes in species composition of phytoplankton and zooplankton may be difficult to ascribe to anthropogenic influences, since recent data and analyses (CalCOFI, 1980) seem to indicate that large-scale advection of water masses may change species composition over time. This phenomenon is also highly correlated with the measured biomass of plankton standing crops and serves as a better predictor than the traditional measure of upwelling.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional adverse impacts to plankton are anticipated because none of the stipulations bear any relationship to plankton.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill cleanup and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. The impacts to plankton from oil and gas activities in the Proposed Sale No. 68 region, should Alternative 2 be adopted, would be less in the areas of the Channel Islands National Marine Sanctuary lease tracts. However, impacts for the entire Proposed Sale No. 68 area should remain substantially the same as described under Alternative 1.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Alternative 3 would have effects similar to Alternative 2: a reduction of the impact on plankton in the tracts located in the Santa Barbara Channel Ecological Preserve Buffer zone compared to Alternative 1 impacts. Alternative 3 impacts on plankton would be substantially the same as Alternative 1 for the entire lease sale area for the reason given above.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Alternative 4 would reduce impacts on plankton in the tract area adjacent to Santa Monica Bay, in water around Catalina and Anacapa Islands (as a result of reducing probabilities of spills reaching those waters), and in Santa Monica Bay. As in the other alternatives discussed above, impacts to plankton for the entire lease sale area will not be significantly changed from the impacts described in Alternative 1.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Alternative 5 would not significantly reduce plankton impacts either locally or lease sale areawide. Local plankton impacts would not be significantly reduced because of adjacent tracts already leased and anticipated for development. The deletion of one tract would not change the number of wells or platforms anticipated for the Proposed Sale.

Alternative 6 (Cancel) or 7 (Delay) to the proposed action would either eliminate all impacts to plankton from this Proposed Sale (6) or merely delay (7) the impacts as described under Alternative 1. Technological advances, in the case of Alternative 7, could result in reduced impacts if the Proposed Sale was held later.

4. Benthos

a. Intertidal

i. Alternative 1: Impacts on the intertidal can be caused by oil spills or by pipelines coming ashore. More detailed coverage of these impacts can be found in the FEISs for OCS Sales No. 35 and 48 (U.S. Department of the Interior, 1975, 1979a) and Section IV.A.1.c.

Most research indicates impacts from drilling and pipeline laying should be relatively minor in the area proposed in the Sale. The damage from oil spills could be severe to the rocky shore intertidal, particularly at small isolated areas. Smothering will cause the principal damage to specific upper intertidal species of plants and animals, where all individuals oiled will die. Although the entire intertidal community will not be killed, many individuals of a variety of species will be. Reproduction and repopulation will be retarded for several months, and the extinction of rare endemics is a possibility. Biological recovery will take up to 5 years, while community stature recovery will take up to 10 years. The time of recovery to normal population structure will depend upon the vertical level. The upper barnacle zone should require the least time of any of the vertical levels. This can be accomplished in 1 year. The slowest zone to recover will be the more complex middle and lower levels. The time for these areas to recover will vary from somewhat over 1 year to up to 10 years in the case of a completely destroyed mussel bed. In general, intertidal macrophytes rapidly reestablish their overall cover percentage on disturbed surfaces, while the macroinvertebrates recover slowly. Several populations of macrophytes and macroinvertebrates were determined to be highly sensitive to disturbance and showed very slow recovery. These included the algae Pelvetia fastigiata, P. fastigiata f. gracilis, Hesperophycus harveyanus, surf grass Phyllospadix torreyi and P. scouleri for the macrophytes. Populations of sessile bivalves, including the mussels Mytilus californianus, M. edulis, Septifer bifurcatus, Brachidontes adamsianus, and the clam Pseudochama exogyra all reveal incomplete recovery after 24 months for the macroinvertebrates. Additionally, the mobile chitons, urchins, and the anemones showed slow recovery. Although it is unlikely, the possibility of long-term damage (even less likely permanent) to the intertidal community of the Santa Barbara Channel resulting from cumulative actions does exist.

Areas which have rocky intertidal assemblages or species of unique characteristics are as follows:

(1) Northwest coast of San Nicolas Island - Numerous large tidal pools and a northern sea cucumber Cucumaria pseudocurata which has only been found here and in Santa Barbara Island.

(2) Santa Barbara Island. The northern sea cucumber Cucumaria pseudocurata found intertidally in the Bight only here and at San Nicolas Island. The limpet Siphonaria brannani, an air breather having lungs rather than the usual gills, was found only here.

(3) Santa Rosa Island, inner coast. With extensive areas containing dense beds of the alga Pelvetia sp. and isolated areas of dense populations of black abalone.

- (4) San Clemente island, outer coast. Usually rich and diverse assemblage.
- (5) Several mainland rocky intertidal areas which are geographically separated from other significant rocky intertidal areas by 24 km (15 miles) to 64 km (40 miles). These areas are located around:

<u>Location</u>	<u>Separated from</u>	<u>By Distance-km</u>	
Santa Barbara	Point Conception	50	(31 mi.)
	Point Dume	64	(40 mi.)
	Channel Islands	29-56	(18-35 mi.)
Point Dume	Santa Barbara	64	(40 mi.)
	Palos Verdes	35	(22 mi.)
	Channel Islands	43	(27 mi.)
Palos Verdes	Point Dume	35	(22 mi.)
	Channel Islands	24	(15 mi.)
	Newport	32	(20 mi.)
Newport-Dana Point	Palos Verdes	32	(20 mi.)
	Channel Islands	48	(30 mi.)
	Oceanside	64	(40 mi.)

These distances are a conservative simplification as they do not consider smaller patches of rocky intertidal groins, or coastal stacks which contain intertidal organisms. Some of these smaller intertidal structures are located between the major areas listed above.

- (6) Small areas within larger mainland coast rocky intertidal stretches which have an unusually rich or diverse assemblage compared to surrounding areas. These areas include:

- (a) Treasure Cove on Irvine Coast - tide pools in area little disturbed by human shore walkers.

Other areas of Irvine Coast reported by Kelley (personal communication) to have diverse, relatively undisturbed assemblages,

- (b) Crescent Bay,
- (c) Salt Creek Area,
- (d) Dana Point.

Regarding sensitivity to a large oil spill, high ecological loss would most probably occur at the tide pool area of northwest San Nicolas Island (Number 1 above) during the low tidal periods when oil could cover these pools characterized by shallow calm water with little circulation. If heavy coats of oil cause the dislodgement of the algae Pelvetia as it did with the closely related Hesperophycus during the Santa Barbara oil spill, Santa Rosa Island (Number 3 above) will suffer high ecological loss. Recent evidence indicates it may require Pelvetia over 3 years (Hill, 1980) to 4 years to recover (BLM, in preparation). Not only are the algae themselves a major constituent of the assemblage, they also serve as an important cover and hiding area for smaller invertebrates and algae during low tide (Hill, 1980). With this cover missing many of the smaller invertebrates will undoubtedly suffer mortality. The final island which may suffer a high ecological loss is Santa Barbara Island. The limpet with lungs, Siphonaria brannani is a numerically dominant and presumably important member of the middle intertidal community. Its loss would probably alter ecological interactions within the community. Although it would seem logical that an organism directly dependent on air during low tide would suffer heavy mortality if coated with oil, it has yet to be demonstrated that this would be the case.

The largest consequence of impacts on the isolated mainland coast intertidal areas (Number 5 above) revolves around recovery of the populations, assemblages, or species which have been either completely wiped out or greatly reduced as the result of a large spill. Repopulation from a population completely wiped out must come from brood stock outside the area. Larvae from species previously in the area may not reach vacated areas as rapidly as if they were spawned from within the area itself. Once repopulation commences, recovery probably would proceed as summarized above, although different species could, as a result of advantageous setting periods, out-compete the original dominants and become dominants themselves.

The extent of the damage to a sandy beach intertidal community will be less than that to a rocky shore community. The extent of the damage from large spills is unknown but is not expected to be the complete destruction of a community. Cleanup operations of intertidal areas could cause total destruction or significantly harm the communities of the sandy beach areas actually cleaned. If oil is retained on a sandy beach intertidal for a long time, clams may be heavily impacted. Other commercial and sports shellfish, particularly when in very shallow water, have a possibility of impacts, if oil is retained in their habitat for long periods.

The areas having a 5 percent or greater probability of receiving a hit from a greater than 1,000 barrel oil spill within 30 days will be considered in the oil spill model analysis. This time period will indicate the maximum probability of a hit.

According to the oil spill model only one land segment of the mainland coast (Segment 31) has a 5 percent or greater probability of a hit with a greater than 1,000 barrel spill (none have a 5 percent probability for an over 10,000 barrel spill). This segment is in Ventura County on the Santa Barbara Channel and contains primarily sandy beach intertidal shores with few rocky intertidal areas. The probability of a high ecological loss here is low.

Santa Cruz Island has a 5 percent (inner shore) and 1 percent (outer shore) probability of a hit with a greater than 1,000 barrel spill within 30 days, for a combined probability of 6 percent of a spill reaching either shore. The most likely impact on the rocky intertidal from a single spill of this size is low to moderate.

Of the inner banks region, Catalina Island has a 10 percent probability (inner shore) and a 3 percent probability (outer shore) of a hit with a greater than 1,000 barrel spill within 30 days for a combined probability of 13 percent of oil reaching either shore. This is the only area (inner shore) which has a 5 percent probability of a hit from a large (greater than 10,000 barrel) spill as the result of Proposed Sale No. 68. The most likely impact from the moderate spill (between a 1,000 to 10,000 barrel spill) is low to moderate (Section IV.A.1.c), while that for the large spill must be considered moderate to high. The high impact would occur if the weight of the oil causes dislodgement of a significant amount of common mid-intertidal algae Pelvetia.

According to the oil spill model, on the outer banks, San Clemente Island's intertidal area has a 3 percent probability (inner shore) and a 5 percent probability (outer shore) of a hit with an oil spill of over 1,000 barrels within 30 days for a combined probability of 8 percent of a hit on either shore. The most likely impact to the intertidal will be low to moderate.

ii. Conclusions - Intertidal: In conclusion, impacts from drilling and pipeline laying will be relatively minor. The most probable impact from an oil spill on rocky intertidal areas will be a low to moderate ecological loss. Exceptions to this are several unusual or small isolated intertidal areas, particularly the northwest coast of San Nicolas Island, the inner coast of Santa Rosa Island, and possibly Santa Barbara Island where the ecological loss could be high.

The most probable impact on sandy beaches from a spill will be a low ecological loss. Cleanup operations could cause a high ecological loss. Although this loss is unlikely, the possibility of long-term damage to the intertidal community of the Santa Barbara Channel resulting from cumulative actions does exist.

iii. Cumulative Impacts-Intertidal: The oil spill model for the cumulative oil and gas development impacts which considers the proposed sale, tankering of imported oil and the previous sales held in California predicts 23 spills over 1,000 barrels and 12 large spills over 10,000 barrels. All but two 26-mile land segments and islands (93 percent) have a 5 percent or greater probability of receiving at least a 1,000 bbl spill. The range of probabilities for all possible segments is between 4 percent and 92 percent. Seventeen of the land segment categories (59 percent) have a 5 percent or greater probability of receiving a large (over 10,000 bbl) spill. Although these figures may be somewhat overestimated because of improved operating procedures and overestimation of recoverable petroleum reserves, they illustrate the problem which arises when an area, such as the Bight, becomes heavily developed. The potential for spills (and at least some impacts) and even multiple spills becomes high. As mentioned above (Section IV.C.4.a.i), the most probable impact on a rocky intertidal area from a large single spill is a moderate ecological loss, except for certain sensitive habitats indicated in that section. Multiple spills of moderate to large size (over 1,000 barrels)

will eventually cause a high ecological loss depending upon frequency, number, and particular habitat. However, the ability to predict the probability of two or more spills hitting the same intertidal area is even less developed than the predictability of a single spill. The probability would be less, although the extent of reduction unknown. The most likely ecological loss on a sandy beach intertidal habitat on the coast of Southern California will be low, occasionally moderate with large spills on a broad gently sloping beach.

The intertidal areas mentioned in Section IV.C.4.a.i as having a 10 percent chance or greater probability of a hit with a large spill (over 10,000 barrels) after 30 days are presented below. San Nicolas and Santa Barbara Islands are included because of their importance and probable sensitivity.

- Northwest coast (north coast of the oil spill model)
of San Nicolas Island 8 percent
- Santa Barbara Island. 8 percent
- Santa Rosa Island, inner or northern coast. 23 percent

The isolated mainland coast rocky intertidal areas having a lesser, but possible high, ecological loss are:

- Santa Barbara 31 percent
- Newport to Dana Point 64 percent

It would appear from these data that the most critical area is Santa Rosa Island, followed by the Santa Barbara mainland rocky intertidal in the Santa Barbara subarea and the Irvine coast (Newport to Dana Point) in the Inner Banks subarea.

Combining the cumulative impacts of oil and gas development with those of other human projects which effect the environment causes a shift to the mainland coast as the greatest area of concern. The projects which effect the marine environment the most are human development, population expansion, and sewage outfalls from domestic and industrial use and land runoff.

One of the largest disruptions to the intertidal is from sightseers who disturb or collect specimens and by people who collect specimens for food. Domestic pollution has apparently reduced the diversity of rocky intertidal assemblages near heavily populated areas (Littler, 1979). Detailed data on the amount of discharged pollutants is presented in Section III.A.3.

As populations spread out, the affected intertidal will expand while, at best, slight improvements of the presently affected intertidal areas will occur. The intertidal around the cities of the Southern California Bight, particularly Los Angeles, have already suffered high ecological losses according to available evidence. In conclusion, more high ecological losses are expected for portions of the Southern California intertidal.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil can affect the survival, reproduction and repopulation of rocky and sandy intertidal species. Therefore, the small increase in oil spills noted above would increase slightly the likelihood that rocky intertidal areas would sustain low to moderate ecological losses. This increase in oil spills also would increase slightly the potential for unusual or small isolated intertidal areas to sustain high ecological losses. Additionally, a small increase in oil spills would increase the likelihood that sandy beaches would sustain a low ecological loss from oil and a high ecological loss from cleanup operations.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. The Channel Islands National Marine Sanctuary consists of the water surrounding the northern Channel Islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapa) and Santa Barbara Island from the high tide line seaward for 6 miles. This includes 3 miles of Federal water. This 3 miles will be included in the Sale if Alternative 2 is not selected. This will include 13 complete and 24 partial tracts. The estimated petroleum reserves gained by these additions is less than 8 percent of the conditional mean oil resources and less than 15 percent of the conditional mean gas resources.

The biological justification for the marine sanctuary is that the island shelf, much of which extends to 6 miles from the island, is the critical area for the highly diverse and productive waters adjacent to and on the shores of these islands. This importance extends not only to obvious things like intertidal, subtidal, kelp, and fish communities, but also to the many birds and breeding and foraging pinnipeds (seals, etc.) which are dependent on the islands. Since the islands are State-designated Areas of Special Biological Significance (ASBS) which are "those areas containing biological communities of such extraordinary, even though unquantifiable, value that no acceptable risk of change in their environments as a result of man's activities can be entertained," impacts from oil and gas development could violate the intent of the law if not the law itself. The outer limit of ASBS is one nautical mile or to a depth of 300 feet (91.4 m), whichever is further (California Water Resources Control Board, 1974). In the case of the Channel Island National Marine Sanctuary, a significant proportion of the island shelf shallower than 300 feet extends past the State 3-mile limit into Federal waters, and much of the rest extends approximately to the 3-mile limit.

The islands have recently become a National Park, designated as a "low use" area, which extends 1 nautical mile from shore (Section I.B.8.c).

The greatest advantage the additional lease area has for reducing the chance of impacts on the intertidal of the islands is the increased time required for a spill to reach the shores. The minimum time required for an oil spill to

travel from the 3-mile Federal-State authority line to shore is 5 hours during 20 mph winds and 4 hours during 25 mph winds. According to the State Air Resources Board Staff Report, winds of over 22 knots (23.1 mph) occur approximately 15 percent of the time. The time required for a spill to travel from the inner edge of the marine sanctuary (6 miles from shore) would be double, or 8 hours and 10 hours for 20 and 25 mph winds respectively. Wave heights are not a limiting factor for oil containment/cleanup operations for more than 30 percent of the year. That is, 70 percent of the time cleanup attempts would be expected to be successful (see Section IV.C.8.a.i). Therefore, if additional time were available to contain an oil slick, it usually could be utilized. However, in other areas such as northern California, wave conditions are often too severe to efficiently clean up and contain oil spills (see USDI, 1980a). Deleting the tracts and partial tracts in the Marine Sanctuary from the Sale will increase the ability to prevent a moderate to possibly high ecological loss to the intertidal communities of the Channel Islands and prevent a high impact to the legally designated ASBS, National Park, and Marine Sanctuary.

If Alternative 2 is adopted, there would also be less chronic long-term pollution to reach the intertidal of the islands of the Sanctuary. Impacts from this form of stress is not known, but conceivably over the next 25 years, some detrimental impacts could occur.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Alternative 3 would decrease the probability of a hit at two segments, i.e., inner Santa Cruz Island and the land segment between Naples and Santa Barbara. The mainland area contains one of the isolated rocky intertidal areas which could require longer to recover if a significant impact occurred. Inner Santa Cruz Island is primarily steep rocky intertidal habitat. Although highly productive, oil will tend to flow off the community when compared with gently sloping intertidal areas.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Rocky intertidal areas which will have a reduced probability of a hit from an oil spill are Point Dume, Anacapa Island, Catalina Island, Los Coronades Islands, and the Santa Monica Coast between Santa Monica and Palos Verdes. The most critical rocky intertidal communities are probably the isolated Point Dume and the Palos Verdes Peninsula where recovery of an impacted community could be retarded.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Intertidal organisms do not occur in this area, since the area is entirely subtidal.

The Delay or Cancel Alternatives (6 and 7) will postpone or eliminate expected impacts unless their adoption resulted in increased tanker imports.

b. Subtidal

i. Alternative 1: Environmental impacts which may be expected to affect benthic life adversely will result from the discharge of drill cuttings, accidental spillage of oil (and associated use of emulsifiers) and other toxic materials, and the burial of newly-constructed pipelines. A description of the marine benthic communities may be found in Section III.B.2.b.

Spilled oil which has not evaporated, been cleaned up, or stranded on a beach after being dispersed into the water as droplets, adheres to particulate matter and sinks to the bottom where it comes into contact with the benthos.

Newell (1948) and Valentine (1966) suggested that a significant number of endemic molluscs occur within the California Bight, some with a distribution restricted to one or a few degrees of latitude. This endemism also occurs in other taxonomic groups (Newman, 1979 and personal communication, 1974). Newell obtained his data from the list compiled by Keen (1937). The names of the endemics occurring from Point Conception to the Mexican Border from Keen's report are available at the Pacific OCS Office but are not included in this EIS because of space restrictions. Valentine updated his data from a variety of sources, chiefly Bunch (1944-1946). Valentine reported 180 species of Bivalvia and Gastropodia, alone, had a north-south geographic range of only 96 km (60 miles) within the Bight area.

It is easy to speculate the obvious implication of this: severe or chronic alteration of comparable areas of the environment could eliminate endemic species forever. It is doubtful that a single large spill could wipe out many if any subtidal benthic species by itself. The effect of widespread chronic oil pollution or a large oil spill in combination with other types of environmental alterations is not known, but could contribute to the extinction of some of these endemics. The area having the highest concentration of endemics is the Santa Barbara Channel which is also the area of most oil activity.

Other areas having benthic assemblages which may be sensitive to oil operations or spills are: 1) the rocky outcrops off Point Conception which may contain unusual benthic assemblages due to the unusual location of the area at the division point of two biogeographic provinces; 2) Santa Rosa-Cortes Ridge, because of its unusual species such as Vema hyalina (see Section III.B.2.b); 3) Tanner and Cortes Banks because of its highly productive community and coral population.

Little evidence exists that kelp is harmed by oil. Large beds protect the coastal intertidal areas from oil impacts. Under extremely heavy repeated oilings, the reproductive biology of kelp may be interfered with, but this is speculative. The expected impact will be the mortality of many canopy associates which range from invertebrates through fish. Particularly susceptible are probably the microcrustacea, especially mysids. Because of the rapid reproductive rate and short life cycle, the population of most of these associates should return to prespill levels within a year.

According to the oil spill model, there is a 10 percent probability of a greater than 1,000 bbl spill reaching Tanner or Cortes Bank within 30 days (a 5 percent probability of a spill greater than 10,000 bbl hitting the area). Since most of the oil passing over the banks will not contact the bottom community, the impact from a large spill will most probably be small (Section IV.A.1.c). Widespread mortality and destruction to a few species which may be extremely sensitive to oil cannot be ruled out, however. Since the ecological relationships between many species in a complex community as this are incompletely known, there is a possibility of a high ecological loss. This is the only benthic area (Outer Banks) having a 5 percent or greater probability of a hit according to the oil spill model.

ii. Conclusions-Subtidal: Low and localized impacts will most likely result from drilling, and pipeline burial. A large spill with maximal sinking will probably have minor impacts on soft bottom subtidal benthos. Areas of greatest concern, where impacts may be greater than low or minor are the rocky outcrops off Point Conception, Santa Rosa-Cortes Ridge, and Tanner and Cortes Banks. The impact of a small spill will be negligible. The impacts from prolonged chronic pollution is not really known.

iii. Cumulative Impacts: When considering the cumulative impacts from OCS oil and gas activities, this subsection will consider only the important and possibly sensitive areas with a probability of 10 percent or more of a large oil spill (over 10,000 bbl) passing over them.

Tanner and Cortes Banks have a combined probability of 44 percent of a hit, while the deep rocky outcrop area off Point Conception has a less than 10 percent (9 percent) probability (based upon the nearest land segment). The probability of a large spill passing over Santa Rosa-Cortes Ridge was not calculated in the oil spill model, but since this area is included substantially in other leases of the outer banks, the probability must be fairly high. The impacts to the subtidal benthos predicted from a spill are low to all but a few species which may be extremely sensitive to oil spills. A possibility of a high ecological loss does exist.

Combining the cumulative impacts of oil and gas development with those of other human activities of the Bight the areas of highest impact shifts to the mainland coast. Domestic and industrial sewage, land runoff pollutants, and population pressure in the form of shipping and recreational activities have already altered many portions of the subtidal off large cities, particularly Los Angeles (Fay, 1972). According to Fay and others evidence indicates that the benthos on parts of the mainland shelf have already undergone high ecological losses. These impacts will continue to be the principal impacts near large cities in Southern California for the foreseeable future.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.5 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number

of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). If a large amount of oil reaches subtidal benthic species, it can affect their survival, reproduction and repopulation. Therefore, the small increase in oil spills noted above could increase slightly the likelihood that soft bottom subtidal benthos would sustain minor adverse impacts. This increase in oil spills also could increase the potential for greater than low or minor impacts to rocky outcrops off Point Conception, Santa Rosa-Cortes Ridge, and Tanner and Cortes Banks. Additionally, if the Biological Stipulation is not adopted, there could be a slight increase in potential adverse impacts to subtidal benthic communities due to lack of identification surveys prior to oil and gas activities. These identification surveys allow examination or avoidance of special biological resources. Without these surveys, rocky outcrops off Point Conception, unusual species such as Vema hyalina on Santa Rosa-Cortes Ridge, and the highly productive community and coral population on Tanner and Cortes Banks are more likely to sustain greater than low or minor adverse impacts from drill cuttings and oil spills.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill cleanup and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. The biological justification for the marine sanctuary relates to protection of the important island shelf area. This is discussed in more detail in the intertidal part (a) of this subsection. In terms of benthic biology, impact will be small unless drilling is conducted on hard bottoms. Although Weldy and Williams (1975) report only one large rocky bottom near or within the sanctuary, Fauchald and Jones (1977) found that many bottoms were too rocky to sample with a box core on the adjacent Santa Rosa Ridge. This shows the area may have more rocky substrate than originally suspected. If the alternative is adopted, there will be a reduction in the potential impacts on bottom communities from long-term chronic pollution resulting from oil operations.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). The tongue worm Listriolobus pelodes may maintain dense populations off Santa Barbara and within the adjunct or buffer zone to the Santa Barbara Channel Ecological Preserve (Figure II.B.3-1). Although recent samples taken within the Listriolobus assemblage as reported by Allan Hancock (1965) have indicated that the large population has not been maintained; the area originally having maximum density has not been sampled recently. This area may still contain high populations of Listriolobus. Although it is known what the impact from oil development may be, a high ecological loss to dense local populations of Listriolobus could be

prevented by eliminating platform construction or pipeline laying in the buffer zone as the result of Alternative 3.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). None of these tracts have rocky outcrops as far as is known (Weldy and Williams, 1975). Impacts to the benthic soft bottom organisms will be prevented in the area of the platforms if Alternative 4 is adopted.

Alternative 5 would delete Tract 165 in the vessel precautionary area. This deletion will prevent moderate to high ecological losses to a community on the rocky outcrop contained in the area if drilling were to occur on the outcrop. If drilling were to occur on soft bottoms, impacts to the local soft bottom assemblages in the area of the platforms will be prevented.

The Delay or Cancel Alternatives (6 and 7) will postpone or eliminate expected impacts unless their adoption resulted in increased tanker imports.

5. Fish and Fisheries

a. Fish

i. Alternative 1

Santa Barbara Channel. Oil spills can impact fish populations by causing short-term acute impacts or long-term sublethal impacts. These impacts are discussed in Section IV.A.1.c. To increase our knowledge of these effects, BLM has contracted Marine Biological Consultants to conduct a California commercial and sportfish oil toxicity study (see Section I.B.4).

Since most oil remains at the surface, species which occur in the surface layer are the most vulnerable to impacts from oil. Many species have egg, larval and juvenile stages which inhabit the surface layer and are susceptible to oil. If a very large number of these stages were killed, the population would be significantly impacted. However: 1) the egg, larval and juvenile stages of most species occur over a much larger area than the oil would contact, 2) the oil spill may not occur at the time of year these stages occur in the surface layer and 3) even if the oil spill does occur during the time these stages are in the surface layer, the oil probably will not remain in the water in significant concentrations for very long, so that reproductive stages subsequently reaching the surface layer could survive. Nevertheless, the possibility that a population, at least for one year class, could be significantly impacted due to oil affecting the egg, larval or juvenile stages should be recognized.

If numerous sexually mature animals are killed by oil, both the size and reproductive potential of the population will be directly reduced. Thus, species whose adult stages are concentrated near the surface at the time of a large the spill (e.g., Pacific bonito, jack mackerel, northern anchovy, California grunion) may be significantly impacted. There are too many variables to accurately predict these impacts, particularly in economic terms, but low to moderate ecological losses may occur (see definitions in Section IV.A.1.c). However, the California Department of Fish and Game reported no detectable ill effects on pelagic fish from the 1969 Santa Barbara oil spill (Mead and Sorensen, 1970). If decreases in fish populations do result from the proposed sale, these impacts probably will not be detected since populations fluctuate dramatically under existing conditions.

Reduction in the population size of one species may significantly affect other species in the food chain. For example, many species feed on northern anchovies. If the number of anchovies is substantially reduced, their predators may need to switch to another food source, if available, to survive. Consumption of this new food source could affect its population size as well. Conversely, reduction in the number of anchovies means the population size of the species it feeds on could increase. The marine food web is extremely complicated and it is not possible to assess how significant the reduction of one species due to Proposed Sale No. 68 will be to others. However, the fact that population sizes are interrelated needs to be recognized. The complexity of the marine food web as it relates to management of multispecies fisheries is discussed by May, et al. (1979).

Manmade structures could impact fish populations if they disrupt habitat that is essential to the species. Disruption would be most likely during placement of a structure. Since the essential habitats of most species are not known, it is not possible to determine how significant this impact will be.

Several types of discharges and effluents could be released during OCS oil and gas activities. OCS Order No. 7 prohibits disposal of any waste materials into the ocean that will create conditions which will adversely affect aquatic life or commercial fishing. Disposal of waste materials is regulated by the Environmental Protection Agency. Of particular concern are drilling muds because very little is known about their long-term, chronic impacts. There are indications that these muds could produce elevated trace metal concentrations in marine organisms and interfere with reproductive processes (see discussion in Section IV.A.5.a). The impact that these elevated trace metal concentrations will have on fish populations is unknown. Any potential impacts from drilling muds to this area could be avoided if drilling muds and cuttings are barged out of the area or ashore.

Sections I.B.5, I.B.6, and I.B.7 discuss mitigation and compensation which are part of the proposal or are planned for this proposal.

Proposed Sale No. 68 also could have beneficial impacts to fish populations. There is no doubt that production platforms and probably other offshore structures act as artificial reefs (Simpson, 1977). The population sizes of some species may actually be slightly increased by the presence of these reefs. Also, adverse impacts to commercial fishing operations (see Section IV.C.5.b) could result in less fish being caught allowing fish populations to increase.

Inner Banks. Fish populations in this area will be impacted similar to those in the Santa Barbara Channel.

Outer Banks. Fish populations in this area will be impacted similar to those in the Santa Barbara Channel. However, since oil probably would be taken ashore by barge rather than by pipeline, the chance of a large oil spill resulting from development in this area would be slightly greater than in the Santa Barbara Channel. Also, four platforms are estimated for this area compared to two for the Santa Barbara Channel so the adverse and beneficial impacts of manmade structures discussed above would increase slightly.

ii. Conclusions: A large oil spill may cause low to moderate ecological losses to surface fishes (e.g., Pacific bonito, jack mackerel, northern anchovy, California grunion). The impacts of manmade structures and drilling muds on fish populations are unknown.

iii. Cumulative Impacts: The oil spill model estimates 22 oil spills greater than 1,000 bbls and 12 oil spills greater than 10,000 bbls from existing leases and import tankering (see Section IV.A.1). Since fish concentrated near the surface are the most vulnerable to oil spills, low to moderate ecological losses could occur to surface fishes from existing oil and gas activities. Fish populations also are stressed from natural oil seeps, and sewage disposal (see discussion in Section III.A.3). These stresses combined with oil spills and fishing pressure could create moderate to high ecological

losses to surface fishes. Cumulative impacts from manmade structures and drilling muds are unknown. Additional impacts on fish populations from the proposed lease sale probably will not be detectable since populations fluctuate dramatically under existing conditions. However, the proposed lease sale could increase slightly the chance that surface fish populations would suffer the ecological losses described above.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills can cause reductions in fish populations by causing short-term acute impacts or long-term sublethal impacts. Therefore, the small increase in oil spills noted above would increase slightly the likelihood that surface fishes (e.g., Pacific bonito, Jack mackerel, northern anchovy, California grunion) would sustain low to moderate ecological losses. If the Biological Stipulation is not adopted, no additional adverse impacts to fish are anticipated, since no fish populations of special biological significance have been identified within any of the tracts.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill cleanup and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced, in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. This reduction in potential adverse impacts from oil spills, manmade structures, drill muds and cuttings, and vessel traffic would slightly reduce possible adverse impacts to fish populations concentrated near the Sanctuary.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 3 would slightly decrease impacts to species near the adjunct to the Santa Barbara Channel Ecological Preserve.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 4 would slightly decrease impacts to species near Santa Monica Bay.

Alternative 5 would delete Tract 165 in the vessel precautionary area. If Alternative 5 is adopted, the impacts to fish would be essentially the same as described above for Alternative 1.

If Alternative 6 (Cancel the Sale) is adopted, none of the adverse or beneficial impacts described above would occur. If Alternative 7 (Delay the Sale) is adopted, the adverse and beneficial impacts would be delayed.

b. Commercial Fisheries

i. Alternative 1

Santa Barbara Channel. If fish or invertebrate populations decrease due to impacts from oil spills, manmade structures or drilling muds (see discussion in Sections IV.C.4 and IV.C.5.a), commercial fisheries also may be impacted since there would be a loss in potential catch. These potential impacts are expected to be short-term in duration.

A large oil spill also could impact commercial fisheries by causing a temporary reduction in fishing space and time. It is unlikely that commercial fishermen will harvest in the area of an oil spill because: 1) their boats and gear may be contaminated, 2) they may be confined to port by oil containment booms, and 3) direct coating and incorporation of petroleum hydrocarbons can cause tainting of marine organisms, rendering them undesirable or unmarketable.

Mead and Sorenson (1970) calculated that the 1969 Santa Barbara oil spill caused a loss of \$800,000 to the commercial fishing industry based on: 1) wages and profits lost by commercial fishermen over the 2-month period in which their operations were halted due to boom deployment across the harbor or their operations were made useless due to tainting, and 2) uncompensated damage to the commercial fishing fleet. Updating the 1969 value of \$800,000

using the implicit price deflators prepared by the U.S. Bureau of Economic Analysis, the 1979 value of the economic impact of the Santa Barbara oil spill on commercial fishermen is \$1.5 million. This estimate does not include property settlements paid by Union Oil to the fishing fleet since their values are unknown. The Santa Barbara oil spill was estimated to total between 780,000 bbl and 15,000 bbl, with the value of 75,000 bbl being felt by many to be the most realistic. Since the expected number of spills from Proposed Sale No. 68 greater than 10,000 bbls is 0.5 (see Section IV.A.1.a), losses similar to those caused by the Santa Barbara spill may occur over the life of the project if an oil spill forced closure of a port. Economic losses also would be incurred by associated support, processing, transportation and marketing industries. However, if fishing vessels are not held to port by oil spill containment booms, the losses will be less. Also, to reduce potential losses from oil spills, some fishermen may be able to fish another area, but this is not always possible. Fishermen may not be familiar enough with other areas to avoid obstacles and find the fish, and there may not be a large enough market demand for the fish they can catch in the other areas. Increased operating costs also may be incurred, particularly if the new area is farther away.

A large oil spill could have a minor economic impact on kelp harvesters since oil may affect kelp reproduction (see Section IV.C.4) and because kelp traps oil rendering it unsuitable for harvest. However, the impact of the 1969 Santa Barbara oil spill on kelp harvesting was negligible because it was possible to reschedule the planned harvest to a later month of the year by which time oil in the kelp beds had been dispersed by natural wave action (Mead and Sorensen, 1970).

None of the mariculture industries are anticipated to be impacted since the probability of an oil spill reaching them is very low. However, if a large oil spill reaches mariculture operations, they would be impacted similarly to other commercial fisheries. The organisms would not be marketable due to tainting even if they lived through an oil spill. Equipment coated with oil would need to be replaced. Additionally, since they have less mobility than other fishermen, mariculture farmers could be forced out of business.

Offshore structures can result in lost fishing space, time and gear. The fisheries most likely to have significant conflicts with offshore structures are the commercial trawl fisheries, but purse seining may have some conflicts (see discussion in Centaur Associates, Inc., 1981). Since most trawling within the Southern California Bight occurs in the Santa Barbara Channel, impacts from offshore structures will be greatest in this area. Surface structures such as drill ships or rigs, platforms, storage and loading systems and floating production systems will preclude fishing where they occur and in a surrounding buffer zone. The size of this buffer zone will depend on several factors including vessel maneuverability, fishing vessel operating characteristics, gear placement and control, effect of weather and sea conditions, legal and safety requirements, bottom topography (trawlers follow depth contours), a fisherman's experience and his willingness to fish near OCS structures. Additional fishing space could be lost to purse seine fishermen if the platforms and associated subsea structures are close enough or arranged in such a manner that fishermen cannot maneuver their vessels between them. This should not present a problem to trawlers because turning radii of otter trawlers are

typically of the same order of magnitude as the buffer distances (Centaur Associates, Inc., 1981).

Subsea structures also conflict with trawlers but do not conflict with purse seining except occasionally in shallow water (<70 m). Structures such as subsea production systems and subsea completion systems preclude trawl space similar to surface structures. However, the buffer zone around these subsea structures will also be affected by the navigational accuracy with which a fisherman can know his position relative to the obstruction.

If fishermen know the location of offshore structures, they will avoid these structures unless there is good reason or financial pressure to fish close to them. In general, a minimum radius of 200 feet of fishing space will be lost around each surface structure, and 300 feet around each subsurface structure marked with a buoy that is located in Southern California (Centaur Associates, Inc., 1981). Other subsurface structures for which the locations are known, but not marked with a buoy, will preclude a minimum radius of 1,200 feet of fishing space due to navigational accuracy. Pipelines should not preclude fishing space other than at irregular surfaces since they usually are not avoided. In general, a maximum radius of 1,320 feet may be lost around all offshore structures if fishermen choose to observe the payment criteria of the Fishermen's Contingency Fund (see Section I.B.7.c), or during placement and maintenance of the structures. However, a mooring type of drillship could have anchors which extend an approximate distance of three to eight times the water depth of the well (although this will be in place for only a few months), and guyed tower platforms, if used, would preclude more fishing space than tension-leg or conventional platforms.

The total fishing area that will be precluded by OCS structures is very small. Multiplying the number of platforms (2), offshore storage and loading facilities (0), subsea production systems (0), floating production systems (0) and subsea completion units (0) predicted for the Santa Barbara Channel times the area that would be lost by a 1,320-foot radius buffer zone and dividing by the total Channel area included in the proposal (183,656 hectares) yields an 0.06 percent loss (101.6 hectares) in fishing area. These calculations do not account for space precluded by drilling ships and rigs, the heterogeneous distribution of fish populations and fishing effort, the tendency of trawlers to fish along depth contours nor the additional space that could be precluded from purse seining, particularly if the platforms are near one another or there is foul weather. Even when these factors are considered, the total fishing area lost will be very small, and there probably will not be a detectable loss in catch. Nevertheless, these structures will be a nuisance to fishermen. At the same time, surface structures can provide benefits as navigational aids and emergency help in case a vessel is disabled or a crewman injured, and platforms could be used for mariculture operations (particularly for growth of mussels and abalones). There is no doubt that production platforms and probably other offshore structures act as artificial reefs (Simpson, 1977). However, this most likely will have a slight impact on most fish populations and may not benefit fishermen since oil companies generally discourage fishermen from anchoring or otherwise floating next to a platform.

It is important that pipelines be compatible with fishing because they often traverse a large area. OCS Order No. 9 (administered by USGS) requires that pipelines be installed and maintained to be compatible with trawling operations (see Section I.B.5). BLM routinely includes similar requirements in pipeline permits it grants. How this compatibility is to be achieved will be decided for each case separately before the pipeline plan is approved (see Section I.B.7.g). When pipelines are buried, they usually create little conflict for fishermen. However, environmental conditions can cause these pipelines to become unburied, and nets can snag on valves, anodes or other irregular surfaces of unburied pipelines. In deep water or rocky bottoms it is unlikely that it will be feasible to bury pipelines. The proposed Wells and Pipeline Stipulation (see Section I.B.6.g), requires smooth surface design and protection over irregular surfaces to insure pipeline compatibility with fishing gear. In Southern California, pipelines have created very few problems for commercial fishermen. However, at present commercial trawl fishermen in the Santa Barbara Channel cannot fish a 12 square mile area where a pipeline was recently laid. Fishermen can no longer trawl this area because their nets hang up on mounds and trenches created by anchors from the pipeline lay-barge. As required by OCS Order No. 9, the oil company plans to restore the area so it is compatible with trawling operations. However, it is not clear how this restoration can be accomplished. One possible solution, suggested by the local fishermen, is to pull a heavy chain over the area to level the bottom. In the future, this conflict may occur again when a pipeline is laid in a heavy clay soil. Use of a pull-barge instead of a lay-barge may prevent this conflict since the pull-barge has smaller anchors. Redesigning the lay-barge anchors also may prevent this conflict. However, if it is not possible to prevent similar conflicts in the future, impacts to the fishermen would be high, particularly if the pipelines are placed in important fishing areas.

The impact of trawl gear on pipelines also is an important consideration. Trawl doors can exert two types of forces which could damage a pipeline upon impact: 1) the impact force as the doors hit the pipelines, and 2) the pull over force as the door is dragged over the pipeline. The pull over force causes a greater stress than the impact force and should be considered seriously for design and certification purposes (Moshagen and Kjeldsen, 1980). If pipeline designs do not incorporate the impacts from trawl doors, placement of pipelines in trawl grounds could result in serious structural damage to the pipeline which may release oil into the environment. As indicated above, OCS Order No. 9 (administered by USGS) and BLM permits require that pipelines be installed and maintained to be compatible with trawling operations (see Section I.B.5).

Other subsea structures which potentially can cause significant conflicts are debris and temporarily abandoned subsea wellheads (also called temporary abandonments and casing stubs). Fishermen often do not know they exist and, therefore, they cannot avoid these objects. When fishermen know the location of the subsea structures, they may snag their nets while trying to catch the fish that are attracted to the structures. A snag on a subsea structure will usually result in lost fishing time and gear damage. Sometimes, the gear is totally lost or may need to be cut loose if it cannot be released. OCS Orders No. 1 and 3 require that the U.S. Coast Guard District Commander determine what aid to navigation devices are needed for subsea Wellheads that are hazards

to the deployment of commercial fishing devices. The proposed Wells and Pipeline stipulation require that subsea wellheads be protected, if feasible, to be compatible with commercial trawl gear. These measures reduce the conflicts. However, in Southern California, snags on subsea wellheads have occurred because the fishermen did not know these objects existed. Attempts have been made to provide the location of these structures, however, most fishermen navigate with Loran C coordinates and these typically have not been provided. In the future, information on the location of obstructions should be more readily available from the charts being prepared by National Ocean Survey (see Section I.B.7.c). Also, approximately 2 percent of the exploratory wells will be temporarily abandoned compared to about 10 percent 5 to 10 years ago. In the past, more wells were temporarily abandoned and left in that state for many years because the oil companies felt it was necessary to do so to maintain their leases. This is no longer necessary and temporary abandonments probably will be only short term until development can proceed.

Nevertheless, one net may be lost on each temporarily abandoned subsea wellhead. Assuming 2 percent of the exploratory and delineation wells are temporarily abandoned and assuming total net loss (although the net may only be damaged), the loss over the life of the project including the cost of the lost fishing time is estimated to be \$20,000 for the Santa Barbara Channel. The Fishermen's Contingency Fund will not compensate for these losses if the locations of the obstructions have been published or if the snag was due to the fisherman's negligence.

OCS Order No. 7 prohibits the disposal of any waste material which will adversely affect commercial fishing except under emergency conditions. However, since some materials will be dropped overboard, particularly in bad weather, minor impacts to commercial trawlers are likely to occur. OCS Order No. 1 requires that any equipment that could be expected to interfere with commercial fishing gear be marked, wherever practicable, with the owner's identification so that fishermen can seek compensation from the appropriate parties. If the responsible parties cannot be determined, the Fishermen's Contingency Fund usually will compensate for the losses (see Section I.B.7.c). However, applying for reimbursement from this fund places administrative burdens on the fishermen and compensation may not be received for several months.

Onshore, competition between the oil and gas industry and commercial fishing industry can occur for berthing spaces and services. The significance of these impacts will depend on the port. Centaur Associates, Inc. (1981) has conducted a study for BLM on port conflicts. They project that Port Hueneme can be expected to support a large percentage of onshore activity for the current leases because the available facilities have minimal development costs and OCS use is highly compatible with existing port uses. Presumably, some onshore activity from Proposed Sale No. 68 will occur at this port (see Section IV.A.2.a). Centaur Associates, Inc. also project that expansion of land use dedicated to the offshore industry at Port Hueneme should not have a negative impact on the fishing industry because existing berthing facilities will remain constant and dedicated to the fishing industry. Impacts may occur at fuel docks, fish and unloading facilities as a result of increased use of the harbor by OCS supply and crew boats. However, larger trawlers could enter the California fisheries in the future (Bybee and Richards, 1979). Since these

trawlers probably would seek a deep-draft port such as Port Hueneme, conflicts between the fishing and oil and gas industries could increase.

Gaviota, Elwood Pier and Carpinteria Pier also may support some OCS-related onshore activity. Since these ports do not support fishing activities, conflicts should not occur. San Diego may receive a small percentage of the OCS-related port activity, primarily for highly specialized services, but this should have negligible impact on the fishing industry (Centaur Associates, Inc. 1981).

Vessel traffic will cause some conflicts with commercial fishing boats. A minor impact will be caused by supply and crew boats since fishermen will need to maneuver around them if these vessels cut across the fishermen's intended path. In foul weather, additional vessels traveling through an area can become a significant hazard, particularly if they do not maintain safe speed levels. The greatest vessel conflicts probably will be with seismic boats. Fishermen have found that after a seismic boat passes through the area, sonar shows that the fish move to the ocean bottom and subsequently no fish are caught. How long the fish remain on the bottom is unknown. Additionally, seismic boats pull a 2-mile long cable behind them that precludes fishing in the area. This cable also can become entangled with stationary fishing gear, resulting in disruption and potentially loss of the fishing gear. This conflict could be reduced if the fishermen receive adequate notice of specifically where the seismic boats will be working so that the gear can be removed or its location can be clearly identified. If this conflict is not reduced, seismic boats may temporarily cause moderate impacts to the commercial fishing industry. Partial reimbursement for gear damage is available from the Fisherman's Protection Act which is described in 50 CFR Part 258 (see the Federal Register, Vol. 44, No. 208, pages 61546-61551, October 25, 1979, and Vol. 45, No. 53, page 17018, March 17, 1980).

Sections I.B.5, I.B.6, and I.B.7 discuss mitigation and compensation which are part of the proposal or are planned for this proposal.

Inner Banks. If a large oil spill occurred in this area, it would cause slightly greater losses than if it occurred in the Santa Barbara Channel since the Inner Banks encompasses the region's most productive fishing grounds and ports. Adverse impacts from manmade structures will be much less than in the Santa Barbara Channel area since trawling in the Inner Banks area is very limited. Port conflicts also will be minor since the Los Angeles and Long Beach harbors are large, industrialized ports, and OCS activities are expected to continue to operate out of existing facilities (Centaur Associates, Inc., 1981). Vessel traffic will create impacts similar to those in the Santa Barbara Channel.

Outer Banks. Since oil probably would be taken ashore by barge rather than by pipeline, the chance of a large oil spill resulting from development in this area would be slightly greater than in the Santa Barbara Channel. However, the Outer Banks area is not close to any fishing ports, so losses from oil spills due to port containment would not occur in this area. Otherwise, losses from oil spills in this area will be similar to those in the Santa Barbara Channel. A large oil spill near Tanner and Cortes Banks probably would have the greatest impact on this area since these Banks are important biologically and they are prime fishing grounds.

Adverse impacts from manmade structures will be much less than in the Santa Barbara Channel area since trawling in the Outer Banks area is very limited. The four platforms and four SALM's projected for this area should not pose significant hazards to purse seiners, but due to the distance these structures will be from shore, they may be very useful to commercial fishermen as navigational aids and places to obtain emergency help. Since there are no ports in this area, all onshore conflicts with manmade structures will occur in the other areas. Vessel traffic will create impacts similar to those in the Santa Barbara Channel.

ii. Conclusions: A large oil spill may cause temporary economic losses to the commercial fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. Mud mounds and trenches from the anchors of pipelaying barges could create a high impact to trawlers in the Santa Barbara Channel. Vessel traffic, particularly seismic boats, may temporarily cause moderate impacts to the commercial fishing industry.

iii. Cumulative Impacts: The oil spill model estimates 22 oil spills greater than 1,000 bbls and 12 oil spills greater than 10,000 from existing leases and import tankering (see Section IV.A.1). If several large oil spills occurred in the Inner Banks, preclusion of fishing from the productive area could cause low to moderate impacts to the commercial fishing industry. The additional impacts of oil spills from the proposed lease sale on the commercial fishing industry probably will not be detectable.

Currently, there are 14 oil and gas structures on the Federal OCS and 55 in State waters (see Section III.C.6). At least 15 more structures may be built on the OCS in the future (III.D.3.f). The total fishing area that will be precluded by Federal OCS structures without the proposed sale is expected to be very small compared to the area fished. The cumulative fishing area precluded in State waters probably causes a small impact to the seasonal halibut fishery in the Santa Barbara Channel. The additional fishing area estimated to be precluded due to the proposed sale is expected to be minor.

Several pipelines probably will be constructed from existing leased tracts. Mud mounds and trenches from the anchors of pipelaying barges could create a high impact to trawlers in the Santa Barbara Channel. The proposed lease sale will increase slightly the likelihood that pipelines will impact trawlers, unless a way is found to eliminate this conflict.

Vessel traffic from existing and future oil and gas activities, particularly seismic boat traffic, is expected to create moderate impacts to the commercial fishing industry unless communication between the two industries is improved. The additional impact from the proposed sale is expected to be minor.

Cumulative impacts of other oil and gas activities are not expected to be significant.

The commercial fishing industry also is stressed for other reasons such as fluctuations in fish populations, changes in market conditions, and restrictions on fish harvests. These other sources cause high economic impacts to the

industry. Overall, the proposed lease sale is expected to cause a slight increase in these existing impacts.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills can cause a temporary reduction in fishing space and time. Therefore, the small increase in oil spills noted above would increase slightly the likelihood that the commercial fishing industry would sustain temporary economic losses. Additionally, if the Wells and Pipeline Stipulation is not adopted, the potential for fishing nets to become entangled on temporarily abandoned subsea wellheads will increase slightly. This increased potential for conflicts would cause a slight increase in economic losses to the commercial fishing industry through net damage and loss or through preclusion of fishing in all areas where wells are temporarily abandoned.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill clean up and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced, in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. This reduction in potential adverse impacts from oil spills, manmade structures, drill muds and cuttings, and vessel traffic would slightly reduce possible adverse impacts to commercial fisheries concentrated near the Sanctuary.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 3 would slightly decrease impacts to commercial fisheries near the adjunct to the Santa Barbara Channel Ecological Preserve.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the Changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 4 would slightly decrease impacts to commercial fisheries near Santa Monica Bay.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Adoption of Alternative 5 would slightly reduce impacts to fishing vessels by precluding structures from an already congested area.

If Alternative 6 (Cancel the Sale) is adopted, none of the adverse or beneficial impacts described above would occur. If Alternative 7 (Delay the Sale) is adopted, the adverse and beneficial impacts would be delayed.

c. Sport Fisheries

i. Alternative 1

Santa Barbara Channel. If fish or invertebrate populations decrease due to impacts from oil spills, manmade structures or drilling muds (see discussion in Sections IV.C.4 and IV.C.5.a), sport fisheries also may be impacted since there would be a loss in potential catch. These potential impacts are expected to be short-term in duration.

A large oil spill also could impact sport fisheries by causing a temporary reduction in fishing space and time (see discussion under commercial fisheries). It is not possible to quantify these losses to sport fisheries, but there could be temporary economic impacts to operators of commercial passenger fishing vessels who rely upon sportfishing activities for their living, particularly if they are confined to port by oil containment booms or fishermen fish elsewhere due to adverse publicity of the oil spill.

In adverse weather, surface structures may be a minor hazard to navigation. At the same time, these structures also can provide benefits as navigational aids and emergency help in case a vessel is disabled or a crewman injured. There is no doubt that production platforms and probably other offshore structures act as artificial reefs (Simpson, 1977). However, this most likely will have a slight impact on most fish populations and may not benefit fishermen since oil companies generally discourage fishermen from anchoring or otherwise floating next to a platform.

Sections I.B.5, I.B.6, and I.B.7 discuss mitigation and compensation which are part of the proposal or are planned for this proposal.

Inner Banks. If a large oil spill occurred in this area, it would cause slightly greater losses than if it occurred in the Santa Barbara Channel since the Inner Banks encompasses the region's most productive fishing grounds and ports. Otherwise, impacts to this area will be the same as those in the Santa Barbara Channel.

Outer Banks. Since oil probably would be taken ashore by barge rather than by pipeline, the chance of a large oil spill resulting from development in this area would be slightly greater than in the Santa Barbara Channel. However, the Outer Banks area is not close to any fishing ports, so losses from oil spills due to port containment would not occur in this area. Otherwise, losses from oil spills in this area will be similar to those in the Santa Barbara Channel.

Adverse impacts from surface structures probably will not occur since the Outer Banks is too far from shore for most sport fishermen to venture. However, the four platforms and four SALM's projected for this area may be very useful as navigational aids and places to obtain emergency help for those sport fishermen who do fish the area.

ii. Conclusions: A large oil spill may cause temporary economic losses to the sport fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. In adverse weather, surface structures may be a minor hazard to navigation in the Santa Barbara Channel and Inner Banks.

iii. Cumulative Impacts: The oil spill model estimates 22 oil spills greater than 1,000 bbls and 12 oil spills greater than 10,000 bbls from existing leases and import tankering (see Section IV.A.1). If several large oil spills occurred in the Inner Banks, preclusion of fishing from this productive area could cause low to moderate impacts to the sport fishing industry.

The additional impacts of oil spills from the proposed lease sale on the sport fishing industry probably will not be detectable. Cumulative impacts of other oil and gas activities and from other sources are not expected to be significant.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills can cause a temporary reduction in fishing space and time. Therefore, the small increase in oil spills noted above would increase slightly the likelihood that the sport fishing industry would sustain temporary economic losses.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill clean up and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced, in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. This reduction in potential adverse impacts from oil spills, manmade structures, drill muds and cuttings, and vessel traffic would slightly reduce possible adverse impacts to commercial fisheries concentrated near the Sanctuary. Therefore, if Alternative 2 is adopted, the impacts to sport fisheries near the Channel Islands could be slightly less than described under Alternative 1.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 3 would slightly decrease impacts to sport fisheries near the Adjunct to the Santa Barbara Channel Ecological Preserve.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 4 would slightly decrease impacts to sport fisheries near Santa Monica Bay.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Adoption of Alternative 5 would slightly reduce impacts to fishing vessels by precluding structures from an already congested area.

If Alternative 6 (Cancel the Sale) is adopted none of the adverse or beneficial impacts described above would occur. If Alternative 7 (Delay the Sale) is adopted, the adverse and beneficial impacts would be delayed.

6. Marine Mammals and Seabirds: OCS oil and gas development has the potential to impact, in some cases very severely, marine mammals and seabirds. A lengthy discussion of impact types and their potential effects on marine mammals and seabirds can be found in the FEIS prepared for Sale No. 53 (USDI, 1980). A summary of the oil spill impacts can be found in Section IV.A.1. The main agents which can impact marine mammals and seabirds are the physical presence of the drilling platform and the pollutants it has the potential to discharge, either in routine or episodic fashion. Pollutants that may be routinely discharged include drilling muds and cuttings, formation water, treated sewage, oil and noise. The volumes and probable sources of these pollutants are extensively discussed in Section IV.A.5. Service vessels and related support activities also have the potential to impact marine mammals and seabirds. Acting singly or in combination with one another, these impact agents may cause varying changes in physiology, reproduction, and behavior to the marine mammals and seabirds of the SCB. These changes can result in direct and indirect mortality. A color visual of marine mammals and seabirds of the SCB can be found in Volume 5 of the Sale #48 Final EIS (USDI, 1979).

a. Marine Mammals

i. Alternative 1

Santa Barbara Area. If a spill should occur, originating within the Santa Barbara leasing area, there is a maximum probability of 54 percent that the spill would strike Anacapa Island and the northern halves of San Miguel, Santa Cruz, and Santa Rosa Islands. These islands, particularly San Miguel and Anacapa, represent the largest year-round pinniped breeding colonies within the SCB. The major pinniped rookery at Point Bennett has a very low probability of being hit by oil, 2 percent. Seasonally, the Santa Barbara area is most vulnerable to a spill striking during the spring and summer months, a period when nesting seabirds and pinnipeds reach their highest numbers. Should a spill strike sensitive feeding and hauling out grounds during this critical period, moderate to high ecological losses (see Section IV.A.1.c for definitions) to pinnipeds are anticipated. Northern fur seals, in particular, are extremely susceptible to heat and buoyancy losses as a result of contact with oil. Clean-up operations (i.e., human intrusion) into sensitive rookery areas could seriously affect resident populations of California sea lions, northern elephant seals, harbor seals, and Steller sea lions.

Northern Fur Seals. San Miguel Island is also the only northern fur seal rookery outside of Alaska, thus, the only one in the SCB. The local population numbers approximately 4,000 animals (Bonnell, et al. 1980). More than half of this SCB fur seal population is associated with the rookery during the summer breeding season. This species reaches its highest abundances in the SCB when the risks from an oil spill are the greatest. The majority of these animals are located at Adams Cove, on the southwest coast of San Miguel Island. Along this portion of the island, the risk from a spill is small (9 percent probability of a hit if a spill should occur). The minority segment of this population (1,300 animals) is located on Castle Rock, off the northwest side of San Miguel Island (NWAFC 1979). The greatest density of northern fur seals at sea is found south of the Channel Islands where the risk from an oil spill is low. Since northern fur seals depend heavily upon clean, unoled fur for

warmth, this species is extremely vulnerable to losses of insulation and buoyancy as a result of contact with oil and subsequent contamination of fur.

Should an oil spill strike either foraging or hauling out areas, a considerable number of animals would die. Ultimate responses of northern fur seals to direct exposure to oil pollution will vary depending upon factors such as toxicity of the oil and the degree of weathering prior to contact, population status at the time of the spill, season in which the spill occurs, and other sources of mortality. Due to the low probability of a spill actually occurring, a low probability of such a spill striking northern fur seal and/or their habitats and a low probability of a spill striking while northern fur seals are present, low to moderate impacts are anticipated. However, there is a low probability of moderate to high ecological losses.

Elephant Seals. The northern elephant seal colony on San Miguel (10,681 animals in January of 1978, 85 percent of the SCB total) is the largest rookery in the species' range and generates over 80 percent of the total annual pup population in the Bight (Bonnell, et al. 1980). Elephant seals may be vulnerable to oil when their pups are nursing. Nursing generally occurs from late January to early March. On San Miguel Island the majority of this species is found during breeding season on the western tip and southern sandy beaches. Small numbers of elephant seals are also found on Santa Barbara Island. In the event that a spill occurs and strikes important areas during nursing periods, moderate ecological losses (see Section IV.A.1.c for definitions) are anticipated. However, due to the low probability of a spill occurring from Proposed Sale No. 68 activities and the low probability of a spill striking while elephant seals are nursing expected ecological losses should be low.

California Sea Lions. San Miguel Island normally supports between 40 and 60 percent of the total SCB population of California sea lions, with the remaining northern Channel islands providing rookery space for much smaller populations. During one summer census in 1976, over 24,000 California sea lions were sighted on San Miguel, representing 58 percent of the SCB total (Bonnell, et al. 1980). As with elephant seals, California sea lions may be more vulnerable to a spill while pups are nursing. Nursing of California sea lions in the Santa Barbara Channel usually occurs from May to early July. The majority of the pupping in the Santa Barbara Channel population occurs on the south side of San Miguel Island, with approximately 5 percent of all pupping occurring on Castle Rock. Relatively little California sea lion breeding activity occurs on the other northern Channel Islands. About 500 pups are born each year on Santa Barbara Island. The majority of the California sea lion pupping areas are in regions of low risk from an oil spill resulting from Proposed Sale No. 68. Therefore, due to the large population size, remote location, and limited seasonal vulnerability of this species, expected ecological losses to California sea lions should be low.

Harbor Seals. Harbor seals in the Bight are estimated to number approximately 3,000 individuals, with between 75 and 80 percent of the SCB population utilizing hauling out areas of the northern Channel Islands. Harbor seals are born in April, May, or June. As with other pinnipeds, harbor seals may be more vulnerable to a spill while pups are nursing. Unlike other SCB pinnipeds, harbor seals breed and pup in large numbers on the leeward side of the Channel

Islands, areas where the risks from an oil spill are the greatest. If a spill occurs, the probability of a spill striking a harbor seal pupping area during the summer months is 25 percent. However, the probability of a spill of greater than 1,000 bbl occurring and striking these areas (within 30 days) is 10 percent. In the event of a spill, moderate ecological losses to local populations would occur. However, the probability of a spill of greater than 1,000 bbl occurring and striking these areas (within 30 days) is 10 percent. Therefore, expected ecological losses to harbor seals should be low.

Guadalupe Fur Seals and Steller Sea Lions. Both species occur in the SCB in reduced numbers, with each local population totaling no more than 10 individuals. San Miguel Island also represents the sole hauling out area for Steller sea lions within the Bight. The risks to these animals as a result of Proposed Sale No. 68 activities are minimal and expected ecological losses should be low.

Cetaceans. Non-endangered cetaceans are widely distributed throughout the SCB. Pacific white-sided and common dolphins are common in the nearshore waters of San Miguel and Anacapa Islands and along the Santa Rosa Ridge. Minke and pilot whales, along with several species of porpoise are frequently encountered along the eastern sill of the Santa Cruz Basin. Along the mainland coast, bottlenose dolphins and pilot whales are seasonally abundant off Point Vincente (Santa Monica Basin, eastern margin). The risk to non-endangered cetaceans from the activities of Proposed Sale No. 68 is expected to be low, due primarily to the low probabilities of a spill occurring and striking these animals.

One spill of 1,000 bbl or greater is expected from Proposed Sale No. 68 activities during the estimated 25 year life of production. The probability of a spill of greater than 1,000 bbl actually striking this area, however, is less than 10 percent. Therefore, as a result of Proposed Sale No. 68 impacts, the expected ecological losses to the marine mammals of this area should be low (see Section IV.A.1.c for definitions).

Inner Banks Area. The California sea lion's haulout area near the Point Dume area, has less than a 10 percent chance of being hit by a spill. The probability of a spill hitting the haulout areas on Anacapa Island is 18 percent. There is a 17 percent probability of a spill striking Santa Catalina's eastern shore, its nearshore waters, particularly to the south are areas of seasonal concentrations of many pilot whales. The coastal water of the inner banks are heavily used by a number of non-endangered cetaceans. The expected ecological losses to marine mammals should be low because of the low probability of a spill striking one of these areas and the low expected number of spills. One is predicted for Proposed Sale No. 68 for the estimated 25-year life of production.

Outer Banks Area. If a spill occurs originating within the Outer Banks leasing area, there is less than a 10 percent chance, for a given season, of it striking either San Nicolas, San Clemente, or Santa Barbara Islands. San Nicolas Island is the second largest pinniped rookery in the SCB, and the Guadalupe fur seal has been sighted here (NOAA comments to DEIS Sale No. 68). To the north, the Santa Rosa Ridge area possesses the highest cetacean concentration

in the SCB. San Clemente Island has a sea lion rookery on its western shore. In addition, Santa Barbara Island is important as a rookery and hauling out area for SCB pinnipeds (California sea lion; northern elephant seals). Near-shore waters for all three islands and the shallower portions of the Santa Rosa Ridge serve as important foraging areas for numerous species of pinnipeds. Due to the low probability of a spill actually striking this area and occurring during the estimated 25-year life of production, the expected ecological losses to the marine mammals of this area resulting from Proposed Sale No. 68 impacts should be low.

ii. Conclusions: No significant changes in the marine mammal populations of the SCB are anticipated. More precisely, low ecological losses are anticipated for elephant seals, harbor seals, Guadalupe fur seals, California sea lions and Stellar sea lions. Note, however, that moderate ecological losses could be sustained by elephant and harbor seals if their nursery areas were oiled. The probability of this happening is low. Northern fur seals are expected to sustain moderate to low ecological losses but there is a low probability they could suffer high ecological losses. None of the cetaceans in the SCB are expected to incur more than a low ecological loss. The long-term effects of other contaminants such as drilling muds and cuttings and formation water upon marine mammals are not known. However, in comparison to the types, quantities, and toxicity of other pollutants entering the environment and their apparent effect on the SCB fauna, Proposed Sale No. 68 contribution to this problem is probably insignificant.

iii. Cumulative Impacts: The potential impacts from Proposed Sale No. 68 are minor compared to the cumulative impacts of the proposal plus existing sources. From cumulative sources there are 12 expected spills greater than 10,000 bbl, over the life of the project. When this is combined with over 50,000 metric tons of oil and grease discharged annually through Los Angeles County's municipal sewage system, it is likely that all species of pinnipeds could sustain at least moderate ecological losses. Northern fur, elephant and harbor seals would probably be the most severely impacted. All three of these species could suffer high ecological losses. Cetaceans could suffer moderate ecological losses if one of the predicted spills hit resident cetaceans while they are nursing.

A number of activities are in various stages of planning or development that have the potential to adversely impact marine mammals. The activity and its potential effect follows:

LNG Terminal at Point Conception	LNG leaks and explosions, increased vessel traffic and disturbances
Space Shuttle and Mx Missile	Blast-off shock waves disturbing breeding areas
State Tideland Sales	Impacts similar in type to Proposed Sale No. 68

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills and oil spill cleanup efforts may adversely impact marine mammals by disrupting their breeding and haulout areas, and by affecting the survival and health of individuals. Therefore, the small increase in oil spills noted above would increase slightly the probability: 1) that elephant seals, harbor seals, Guadalupe fur seals, California sea lions, and Stellar sea lions would sustain low or possibly moderate ecological losses; and that 2) Northern fur seals would sustain moderate to low ecological losses or possibly high ecological losses. If the Biological Stipulation is not adopted, no additional adverse impacts to marine mammals are anticipated since at this time it seems unlikely that there will be sufficient justification for invoking the stipulation to protect marine mammals. However, if the Biological Stipulation is not adopted, this action would preclude the option of invoking this Stipulation in the future to protect the marine mammals.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill clean up and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. Adoption of Alternative 2 will reduce the potential impacts to the marine mammals inhabiting the northern Channel Islands area. The expected ecological losses noted in the previous section would be slightly reduced in the event of a spill striking critical foraging and breeding areas. The additional 3-mile buffer zone would provide for increased response time in the event of a spill. Overall, the expected ecological losses cited in the previous section remain essentially unchanged as a result of this alternative. This estimated slight reduction in impacts is not more substantial because only one spill (1,000 bbl or greater) is predicted over the 25 year expected life of production as a result of the proposed sale (Alternative 1). Also the total number of platforms and wells are not expected to be decreased as a result of Alternative 2. Simply the risk to marine mammals and seabirds from potential impacts from Proposed Sale No. 68 is low with or without development within the six mile buffer area. But the small risk should be slightly smaller with the adoption of Alternative 2. (See Section II.B.2.c.)

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the

Sanctuary if Alternative 2 were adopted (see discussion above). This alternative would seem to eliminate some of the risk from a Proposed Sale No. 68 spill striking the north shore of Santa Cruz and Santa Rosa Islands. These islands have major pupping grounds of harbor seals.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). This alternative would eliminate the risk, respective probabilities of 17 percent and 7 percent, of a spill originating from these tracts and striking Santa Catalina and Anacapa Islands. The expected one spill from Proposed Sale No. 68 and its potential adverse impacts to marine mammals will be reduced by a slight amount.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Deleting tract 165 would reduce the probability of a spill hitting Point Fermin, an area frequented twice each year by migrating gray whales. The elimination of this tract from the lease sale could reduce potential impacts to marine mammals by a slight amount.

A cancellation of the Sale (Alternative 6) would eliminate the risk of potential Proposed Sale No. 68 impacts to marine mammals of the SCB.

A delay in the proposed sale (Alternative 7) would simply delay the risk of impacting marine mammals of the SCB, assuming no additional oil is imported as a consequence of the delay.

b. Seabirds

i. Alternative 1

Santa Barbara Area. Seasonally, this area is most vulnerable to a spill striking during the spring and summer months, a period when nesting seabirds reach their highest numbers. In the event a spill strikes seabird feeding and nesting areas during breeding and fledging periods, moderate to high ecological losses (see Section IV.A.1.c for definitions) could be expected. Diving seabirds (cormorants, pelicans) are particularly susceptible to fouling by oil. Human intrusion due to cleanup activities may also adversely affect resident colonies.

One spill of 1,000 bbl or greater is expected from Proposed Sale No. 68 activities during the estimated 25-year life of production. The probability of a spill of greater than 1,000 bbl actually striking these areas, however, is less than 10 percent. Therefore, as a result of Proposed Sale No. 68 impacts, the expected ecological losses to the seabirds of this area should be low (see Section IV.A.1.c for definitions).

Inner Banks Area. Assuming a spill occurs, originating within the Inner Banks leasing area during the summer, it would have the highest probability (18 percent) of striking Anacapa Island. Western gull (2,500 breeding pairs) and brown pelican (76-417 breeding pairs) populations on and near the island reach their highest numbers during late spring and early summer. Brown pelican fledglings, present during this period, are quite vulnerable to oil contamination. Diving seabird species are also susceptible to fouling of plumage after contact with floating oil. It is estimated that moderate to high ecological losses (see Section IV.A.1.c for definitions) to the seabirds of this area will result in the event that a spill occurs during the summer.

Assuming a spill occurs during the spring, Santa Catalina Island's eastern shore would be the most vulnerable. Maximum probabilities of a hit (12 percent) would occur if the spill originated from tracts 145 or 146. In the fall and winter, Santa Catalina's eastern shore is again the most vulnerable with probabilities of 17 and 12 percent, respectively, for hits from spills originating in the tracts to the east of the island. In the summer, the probability of oil striking Santa Catalina is less than 10 percent. The nearshore waters of the island, particularly to the south, represent a major flyway for migrating seabirds, (e.g., loons, Brant). In the event a spill strikes this area, low to moderate ecological losses (see Section IV.A.1.c for definitions) to these species could result. Other populations of seabirds of the Inner Bank area are not as vulnerable to the direct effects of a spill. One spill of 1,000 bbl or greater is expected from Proposed Sale No. 68 during the 25-year life of production and the low probability of a spill occurring, the expected ecological losses to the seabirds of this area should be low (see Section IV.A.1.c for definitions).

Outer Banks Area. If a spill occurs originating within the Outer Banks leasing area, there is less than a 10 percent chance, for a given season, of it striking either San Nicolas, San Clemente, or Santa Barbara Islands. San Nicolas Island is characterized as a major seabird breeding site (Brandt's cormorant; western gull). San Clemente Island is also a major nesting area for seabirds. Santa Barbara Island is a major breeding area for nine seabird species including possibly the world's largest colony of Xantus' Murrelet (1,000-5,000 breeding pair). Nearshore waters for all three islands and the shallower portions of the Santa Rosa Ridge serve as important foraging areas for numerous species of seabirds. In the event of a spill, moderate to high ecological losses (see Section IV.A.1.c for definitions) to these species are anticipated. Due to the low probability of a spill actually occurring, the expected ecological losses to the seabirds of this area resulting from Proposed Sale No. 68 impacts should be low.

ii. Conclusions: No significant changes in the seabird populations of the SCB are anticipated. In the event that a spill occurs and

strikes either these species or their habitats, the seabirds are generally expected to sustain minor impacts. Seabirds, both those which nest in and migrate through the Proposed Sale area, could be expected to suffer low ecological losses. Nesting occurs between January and August, while migrating species pass through the Bight in the spring and fall. Therefore, regardless of the season if a spill occurred, seabirds will be deleteriously impacted. Birds whose habitats and foraging areas are primarily terrestrial should experience no impacts from Proposed Sale No. 68 caused activities.

iii. Cumulative Impacts: The cumulative effects upon seabirds could result in seabirds experiencing moderate to high ecological losses. Those species which would be hardest hit would be diving seabirds, such as cormorant and pelicans.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills and oil spill cleanup efforts may adversely impact seabirds by disrupting their foraging and nesting areas, and by affecting the survival and health of individuals. Therefore, the small increase in oil spills noted above would increase slightly the probability that seabirds could sustain minor adverse impacts. If the Biological Stipulation is not adopted, no additional adverse impacts to seabirds are anticipated since it seems unlikely at this time that there will be sufficient justification for invoking the stipulation to protect seabirds. However, if the Biological Stipulation is not adopted, this action would preclude the option of invoking this Stipulation in the future to protect seabirds.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill clean up and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. Adoption of Alternative 2 will reduce slightly the potential impacts to the seabirds inhabiting the northern Channel Islands area. The expected ecological losses noted in the previous section would be slightly reduced in the event of a spill striking critical foraging and breeding areas. The additional 3-mile buffer zone would provide for increased response time in the event of a spill. Overall, the expected ecological losses cited in the previous section remain essentially unchanged as a result of this alternative. This estimated slight reduction in impacts is not more

TABLE IV.C.6.b.ii-1

PROBABILITIES (IN PERCENT) OF ONE OR MORE SPILLS RESULTING FROM EXISTING AND PROPOSED DEVELOPMENTS AND OCCURRING AND CONTACTING AN AREA OF SPECIAL BIOLOGICAL IMPORTANCE TO MARINE MAMMALS AND SEABIRDS WITHIN 30 DAYS
(See Table IV.A.1.a-1 for a more detailed analysis)

<u>Major Marine Mammal/ Seabird Habitat Areas</u>	<u>Land Segment No.</u>	<u>Spills 1000 bbls.</u>	<u>Expected No. of Spills</u>	<u>Spills 10,000 bbls.</u>	<u>Expected No. of Spills</u>
Point Conception	28	19%	0	9%	0
Ventura	31	43	1	20	0
Point Dume	32	5	0	3	0
Point Fermin	35	92	2.5	59	1
Dana Point	36	11	0	5	0
La Jolla	39	13	0	7	0
N. San Miguel Is.	41	41	1	22	0
S. San Miguel Is.	42	6	0	3	0
N. Santa Rosa Is.	43	41	1	23	0
S. Santa Rosa Is.	44	8	0	4	0
N. Santa Cruz Is.	45	75	1	49	1
S. Santa Cruz Is.	46	6	0	3	0
Anacapa Is.	47	56	1	34	0
Santa Barbara Is.	51	14	0	8	0
W. San Nicolas Is.	49	13	0	7	0
S.W. Santa Catalina Is.	53	8	0	4	0
Los Coronodas Is.	56	15	0	8	0
Tanner Bank	At sea Cat.	35	0	19	0
Cortez Bank	At sea Cat.	43	1	25	0

substantial because only one spill (1,000 bbl or greater) is predicted over the 25 year expected life of production as a result of the proposed sale (Alternative 1). Also the total number of platforms and wells are not expected to be decreased as a result of Alternative 2. Simply the risk to marine mammals and seabirds from potential impacts from Proposed Sale No. 68 is low with or without development within the 6-mile buffer area. But the small risk should be slightly smaller with the adoption of Alternative 2. (See Section II.B.2.c.)

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). This alternative would seem to eliminate some of the risk from Proposed Sale No. 68 spill striking the north shore of Santa Cruz and Santa Rosa Islands. These islands have major breeding and roosting colonies of seabirds.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). This alternative would eliminate the risk, respective probabilities of 17 percent and 7 percent, of a spill originating from these tracts and striking Santa Catalina and Anacapa Islands. The expected one spill from Proposed Sale No. 68 and its potential adverse impacts to seabirds will be reduced by a slight amount.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Deleting tract 165 would reduce the probability of a spill hitting Point Fermin, an area frequented twice each year by a large number of seabirds. The elimination of this tract from the proposed sale could reduce potential impacts to seabirds by a slight amount.

A cancellation of the proposed sale (Alternative 6) would eliminate the risk of potential Proposed Sale No. 68 impacts to seabirds of the SCB.

A delay in the proposed sale (Alternative 7) would simply delay the risk of impacting seabirds of the SCB, assuming no additional oil is imported as a consequence of the delay.

The potential impacts from Proposed Sale No. 68 are minor compared to the cumulative impacts of the proposal plus existing sources. From cumulative sources there are 12 expected spills greater than 10,000 bbl, over the life of the project plus over 50,000 metric tons of oil and grease discharged annually through Los Angeles County's municipal sewage system. A number of activities are in various stages of planning or development that have the potential to adversely impact seabirds. The activity and its potential effect follows.

LNG Terminal at Point Conception	LNG leaks and explosions, increased vessel traffic and disturbance
Space Shuttle and Mx Missile	Blast-off shock waves disturbing breeding areas
State Tideland Sales Sale	Impacts similar in type to Proposed Sale No. 68

7. Endangered and Threatened Species

a. Alternative 1

Santa Barbara Area. If a spill occurs and strikes area #1, 2, or 3 (see Table IV.C.7-1), the impact could result in a high ecological loss (see Section IV.A.1.c for definitions). If a spill occurs and strikes either area #5 or 6, the magnitude of the impact on endangered species would depend upon the season in which it struck. Brown pelican fledglings are considered to be very vulnerable to oil during the spring and summer; gray whales are present as migrants in the SBC area from December through March. In the event that a spill occurs during these periods, ecological losses to brown pelicans could be high; ecological losses to the gray whale are indeterminable. The low probability of a spill and the seasonal presence of many of these species in the Santa Barbara Channel area lowers the potential risk to the endangered species subject to impacts from Sale No. 68 activities.

Inner Banks Area. If a spill should occur and strike any of the first seven areas listed in Table IV.C.7-2, a high ecological loss could be expected (see Section IV.A.1.c. for definitions). In the event of a spill, ecological losses to brown pelican fledglings of the Anacapa Island area (area 8) should be high during spring and summer. The bald eagle population of Santa Catalina Island could experience low ecological losses should a spill occur within the Inner Banks area and strike area 8. The ecological losses to gray whales migrating through the coastal offshore area (area 10) following a spill are indeterminable.

Outer Banks Area. If a spill should occur from tracts in the Outer Banks area, the probability of it striking Santa Barbara (SB), San Clemente (SC), and San Nicolas Islands (SN) are 14 percent, 13 percent, and 22 percent, respectively. Santa Barbara and San Clemente Island serve as important foraging and intermittent breeding areas for the California brown pelican. The shallow waters surrounding these three islands are used extensively by this species and other foraging seabirds, as well as by non-endangered pinnipeds. In the event of a spill occurring and striking these islands, endangered populations could suffer moderate to high ecological losses. If a spill occurs near the Tanner Banks (TB) area, there is a 100 percent chance of it hitting the Tanner Banks, a region frequented by foraging seabirds and endangered whales. The probability of a spill of greater than 1,000 bbl actually occurring and striking one of these four areas i.e. SB, SC, SN, TB, within 30 days is 4 percent, 5 percent, 3 percent, and 3 percent, respectively. Therefore, the risk to endangered species in the Outer Banks area is considered to be low.

Birds. Potential impacts from Proposed Sale No. 68 pose the greatest threat to birds that are closely associated with the water. Species such as the American peregrine falcon, California condor, San Clemente loggerhead shrike, San Clemente sage sparrow, and the Santa Barbara song sparrow (if still extant) are not likely to be impacted by OCS oil and gas development. Habitats for these species are primarily terrestrial areas which are not likely to experience impacts from this or other OCS lease sale activities. The southern bald

TABLE IV.C.7-1

ESTIMATED RISK TO ENDANGERED SPECIES FROM AN OIL SPILL
ORIGINATING FROM SANTA BARBARA LEASING AREA

<u>Area</u>	<u>Conditional Probability of a hit w/in 30 days</u>	<u>Probability of a spill (<1000 BBL) occurring and striking the area</u>	<u>Species Affected</u>
(1) Santa Ynez River Mouth	26%	Less than 0.5%	Least tern
(2) Goleta Slough	30%	4%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak
(3) Carpinteria Marsh	100%	5%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak
(4) Anacapa Island	26%	5%	Brown Pelican
(5) Santa Barbara Channel	100%	10%	Gray Whale

TABLE IV.C.7-2

ESTIMATED RISK TO ENDANGERED SPECIES FROM AN OIL SPILL
ORIGINATING FROM INNER BANKS LEASING AREA

<u>Area</u>	<u>Conditional Probability of a hit w/in 30 days</u>	<u>Probability of a spill (<1000 BBL) occurring and striking the area</u>	<u>Species Affected</u>
(1) Carpinteria Marsh	24%	5%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak
(2) Mugu Lagoon	26%	1%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak; Least Tern
(3) Bolsa Chica and Anaheim Bay	68%	2%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak; Least Tern
(4) Least Tern Nestine Sanctuary and Santa Ana River Mouth			Least Tern
(5) Upper Newport Bay Santa Margarita River	100% 30%	3% 3%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak; Least Tern
(6) San Diego Co. Lagoons	21%	4%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak; Least Tern
(7) San Diego Bay and Tijuana Estuary	10%	2%	Light-footed Clapper Rail; Belding's Savannah Sparrow; Salt-marsh Bird's Beak Least Tern
(8) Anacapa Island	33%	5%	Brown Pelican
(9) Santa Catalina Island	30%	10%	Bald Eagle
(10) Coastal Offshore Area	100%	10%	Gray Whale

eagle, an apparently successful recolonizer at Santa Catalina Island, may be impacted during a spill since it is known to forage along the coastline. Potentially impacted species would include the California brown pelican, California least tern, light-footed clapper rail, Belding's savannah sparrow, and the black rail. If a spill should occur and strike either nesting or foraging areas (e.g. least tern nesting sanctuary on Huntington Beach), these species could be heavily impacted. Because of the low probability of a spill actually occurring and striking either these species or their habitats, few impacts are likely to be experienced by the threatened or endangered bird species of the SCB.

Mammals. If a spill occurs, there is less than a 10 percent chance of oil from Proposed Sale No. 68 activities striking a portion of the southern sea otter's range. Although the world population of nearly 2000 animals is distributed primarily along the central California coast between Santa Cruz and Pismo Beach, a few sea otters are observed annually in the SCB. These few animals are not expected to be significantly impacted by the one spill projected from Proposed Sale No. 68. The possibility of the southern sea otter naturally expanding its range into the SCB exists but it is unlikely. Observations of BLM contracted researchers at the University of California at Santa Cruz have noticed a northward change to the southern limit of the sea otter's range, indicating a possible reversal of its former range expansion to the south. If a spill did occur and hit the otter's range the impact could result in high ecological losses.

Plans for translocating some of the southern sea otters to other locations are being considered by the USFWS. San Nicolas Island is supported by some as a prime location for a transplantation of a portion of the herd.

The highest probability, from the model, of a spill striking San Nicolas from a given launch point is 17% from a leased tract and 29% from a transportation accident. The occasional stray sea otter and potentially relocated ones would have a slight chance of being stuck by an oil spill but if they did come in contact with oil they would probably die. (See Sale No. 53 for discussion of potential sea otter impacts.)

The island fox, listed by the State of California as a rare animal, is found on all SCB islands except Anacapa and Santa Barbara. This species is not likely to be impacted from activities resulting from Proposed Sale No. 68 since its habitat is terrestrial.

The Guadalupe fur seal has been nominated for consideration for classification as an endangered species. This fur seal, like the more numerous northern fur seal, depends upon its fur for protection from the cold. If a spill should hit the few transient guadalupe fur seals, apparently originating from the main herd at Guadalupe Island, Mexico, they could die. This loss would not affect the main population and probably not influence the return of other transients to the SCB.

Of the seven endangered whale species that are found within the Bight, the gray whale is considered the most vulnerable to the potential impacts from Proposed Sale No. 68. The gray whale is a frequent (bi-annual) visitor to the SCB, is found in large numbers, and frequents nearshore areas associated with oil and gas development. The gray whale is potentially vulnerable to ingestion, inhalation, and epidermal contamination as a result of contact with oil,

although the degree of impact from these factors is currently unknown. Noise pollution is a factor suggested by some to cause the gray whale to alter its migratory route, although this hypothesis was not supported by Dohl (1978) in his three-year study of cetaceans of the SCB; noise pollution and offshore disturbances have been increasing concurrent with the increases in gray whale population numbers. Recent sightings of gray whales in more distant offshore areas have been attributed to increases in population numbers, not increased OCS activity (Bonnell et al. 1980). The low probability of a spill from Proposed Sale No. 68 and the gray whale's seasonal presence within the SCB are factors that minimize this species' risk to impacts from Proposed Sale No. 68 activities.

The other endangered whale species are less likely to be impacted than the gray whale since individuals of these species are less abundant and utilize more distant offshore regions of the Bight. Assuming that a spill occurs, endangered baleen whales (e.g. blue, fin, humpback) could accidentally ingest oil while feeding, thereby fouling their baleen plates. Other baleen whales, such as right and Sei whales which skim the water surface, may be the most vulnerable of the baleen feeders (Pivorunas, 1979). The effects of oil ingestion on cetaceans are unknown. Overall, the risk to the endangered whale species of the SCB is considered to be low due to the low probability of an oil spill occurring as a result of Proposed Sale No. 68 activities.

Reptiles. Sightings of endangered sea turtle species within the southern California Bight are rare, being restricted to San Diego and Long Beach harbors (Jim Lecky pers. comm.). These migrant individuals are not part of a resident breeding population and are not likely to be impacted by Proposed Sale No. 68 activities.

The San Clemente Island night lizard, a terrestrial species, should not be impacted by the activities of this proposed sale.

Insects. The two mainland endangered butterfly species, the El Segundo blue and the Palos Verdes blue, are not likely to be impacted by Proposed Sale No. 68 activities since both species are strictly terrestrial. Their habitats will not be touched by spilled oil and expected degradation of air quality is low and should not affect those species.

Mollusk. Vema hyalina (McLean 1979), a monoplacophoran limpet recently nominated for consideration for endangered species status, has been encountered only on the southern segment of the Santa Rosa-Cortes Ridge, northwest of Tanner and Cortes Banks. To date, collection of Vema has occurred only at depths between 174 and 402 m (571-1319 feet) on rocky cobble substrates (Lowenstam, 1978; McLean, 1979). A more detailed discussion of the importance of this species can be found in Section III.B.2.b.

Due to its limited depth range and restricted distribution, Vema is considered to be exceptionally vulnerable to impacts from oil and gas exploration and development within close proximity to its habitat.

Plants. The salt-marsh bird's beak is found in the coastal saltmarshes of Southern California, normally at or near the high tide line. The impact of Proposed Sale No. 68 activities on this species should be low unless spilled oil strikes a marsh area and is deposited during high tide.

b. Conclusions: Endangered species whose habitats and foraging areas are strictly terrestrial should experience no impacts from Proposed Sale No. 68 activities. Species inhabiting or utilizing coastal and offshore areas of the Bight will be affected depending upon the nature and extent of an oil spill. Ecological losses could range from low to high. However, potential impacts from Proposed Sale No. 68 are expected to threaten the existence of a species, or produce unacceptable destruction of its habitat. See Section IV.C.6.b.ii for discussion of effects of non-oil contaminants.

c. Cumulative Impacts: The description of cumulative impacts as cited in Section IV.C.6.d are also applicable to this section. The potential impacts to the endangered and threatened species of the SCB are significant. The combined effects of Proposed Sale No. 68 existing OCS oil and gas operations and other activities are anticipated to continue to threaten the endangered and threatened species of the SCB with potential impacts. A major accident such as a supertanker spill or smaller incidents such as pipeline failures or platform blowouts should not jeopardize the continual existence of any threatened or endangered species from the SCB. The cumulative effects of OCS development upon the gray whale's migrating behavior should be minor. The exceptional recovery of the once depleted gray whale population to its probable pre-exploited level has not appeared to be effected by existing high levels of shipping, tanking, OCS oil and gas development and military activity.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills and oil spill cleanup efforts may adversely impact endangered species by disrupting their foraging, breeding, haulout or nesting areas, and by affecting the survival and health of individuals. Therefore, the small increase in oil spills noted above would increase slightly the probability that endangered species would sustain low to high ecological losses. If the Biological Stipulation is not adopted, no additional adverse impacts to endangered species are anticipated since it seems unlikely at this time that there will be sufficient justification for invoking the stipulation to protect endangered species. However, if the Biological Stipulation is not adopted, this action could preclude the option of invoking this Stipulation in the future to protect endangered species. Instead, appropriate mitigation measures, if needed, would need to be developed through consultation with NMFS and FWS as required by the Endangered Species Act, as amended.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill cleanup and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced, in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. This alternative could reduce the potential impacts to the brown pelican and gray whale which frequent the area. The additional 3-mile buffer zone will provide for increased response time in the event that a spill occurs. Assuming this alternative is adopted, the expected ecological losses estimated in the previous section should be slightly reduced in the event of a spill striking sensitive breeding and foraging areas.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 3 could slightly reduce potential risks to the gray whale and brown pelican.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Thus, adoption of Alternative 4 could slightly reduce potential risks to the gray whale and brown pelican.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Since only one tract would be deleted, at most a very slight reduction in risks to the gray whale and brown pelican could occur.

A cancellation of the Sale (Alternative 6) would eliminate the risk of potential Proposed Sale No. 68 impacts to endangered and threatened species of the SCB. However, even without the Sale oil spill risks will remain high due to existing activities.

A delay in the proposed Sale (Alternative 7) would simply delay the potential risk of impacting endangered and threatened species of the SCB, assuming no additional oil is imported as a consequence of the delay.

8. Sensitive Biological Areas

a. Estuaries and Wetlands

i. Alternative 1: Estuaries, bays, and marshes are critically important biologically. Estuaries are not as large or numerous in Southern California as they are in some other portions of the United States. Much of the estuarine environment has been severely altered or destroyed. It is essential, therefore, to preserve the remaining unaltered areas if species dependent upon these estuaries for breeding, nursery areas, or during their entire life cycle, are to survive in Southern California.

The intertidal organisms reported killed during the Santa Barbara blowout were able to repopulate the impacted intertidal because of large populations at surrounding nonaffected areas (Straughan, 1971). More rare species with a very narrow and limited reproductive range could conceivably have become eliminated from the Southern California region. Because of the rarity of estuaries in the lease area, a similar situation is possible with certain estuarine species. Several species use bays for nursery areas (California halibut and Pacific staghorn sculpin). Other species, both invertebrates and vertebrates, are important permanent residents of bays (Ho, 1974). Further destruction of estuaries in Southern California will increase the probability that estuarine affiliated species will be entirely eliminated from the coast because of the elimination of nursery grounds and habitat destruction.

A more complete discussion of oil impacts on estuaries can be found in Pacific OCS Sale Nos. 35, 48, and 53 (Department of the Interior 1975, 1978a, 1980). The impact agents of concern from oil development will be spilled oil. Other impact agents are unlikely to affect estuaries in this case.

Impacts expected for Southern California estuaries are somewhat hard to forecast because most of the historical information comes from other areas and has involved varying fuel oil toxicities. According to Bender, et al. (1977) and others, however, severe impacts have been documented when crude oil is spilled on estuarine habitats. In the event of a large spill, which completely covers the surface and the flats of the lagoon, and remains for several days, destruction could be manifested for over 10 years. Some species, if endemic, may be permanently eliminated. Artificial restocking of the habitat may also be necessary.

According to Gundlach and Hayes (1978), estuarine salt marshes and mangroves, followed closely by sheltered tidal flats, such as occur in an estuary, are the most susceptible habitats to oil contamination.

It becomes clear that it is very important to prevent an oil spill from entering an estuary, particularly during a large spill. There is a greater probability of accomplishing this by diverting oil away from the entrance before the oil slick reaches it than by containing the slick just outside the bay by placing a mechanical barrier (e.g., boom) across the estuary mouth. Diversion of an oil spill away from an estuary may cause the oil to end up at an adjacent

intertidal area. Adjacent intertidal areas may also be important. Oil dispersants may be of use in reducing the size of the slick which could enter an estuary. Oil cleanup methodology is discussed further in Section IV.A.1.b.

How successful will the diversion-containment operations be in Southern California? Many variables are involved in the success or failure of this approach, since the conditions that make boom equipment ineffective are only known in a general way. The physical conditions under which diversion equipment is no longer effective are: water current velocity greater than 1 knot (1.69 ft/ sec), surface wind velocity greater than 30 mph, or wave height of six feet or greater. Little nearshore current velocity data is available. Coastal wind velocities of 30 mph are infrequent, occurring less than 1 percent of the time. Data are available for wave heights which is one of the more important physical parameters.

The frequency of waves greater than 1.8 m (6 feet), expressed as significant wave height probabilities, is shown in Table IV.C.8.a.i-1. Significant wave height is the average height of the one-third highest waves in a wave record. The two sets of data in the table reflect deep water waves at the northern and southern extremes of the Bight and nine coastal stations located throughout the Bight. Since it is the most desirable to divert an oil slick before it has moved close to an estuary entrance, the wave heights most likely (at least hopefully) encountered by diversion equipment during a spill are probably somewhere between the deep water waves and coastal waves shown in the table. Based upon this assumption, oil diversion equipment will be ineffective between 0.1 and 58 percent of the time. Most commonly, this figure is between 1 and 29 percent. The most effective diversion period is during the early winter (over 90 percent effective) while the least is early summer (from 42 percent to 60 percent effective).

Since the openings to estuaries and the protective ability of oil containment-diversion equipment is highly variable, it is necessary to generalize when discussing potential impacts of oil spills on estuarine habitats. With the use of conventional containment-diversion techniques, it is assumed that estuary openings of greater than 100 meters are extremely difficult to protect once oil approaches the mouth. The approximate widths of the entrances of estuaries are shown in Table III.B.7.a-1 which indicates that Anaheim Bay, lower Newport Bay, Mission Bay, and San Diego Bay have widths greater than 100 meters. During certain periods of the year (winter) it might be possible for nine additional estuaries to have entrances of greater than 100 meters. The breakwater opening and channel entrance to Anaheim Bay are each less than 200 meters wide and would probably allow additional diversion capabilities (BLM personnel observations). According to Baker (personal communication) the entrance to Mugu Lagoon very often becomes greatly expanded during wet winter months. A large spill entering an estuary would most probably cause a high ecological loss requiring over 10 years for recovery.

Containment abilities will most probably range from about 40 to 99 percent effective with early winter being the most effective and early summer being

TABLE IV.C.8.a.i-1

PROBABILITY OF WAVES GREATER THAN 6 FEET (1.8 m) AT
SOUTHERN CALIFORNIA BIGHT LOCATIONS BASED ON SIGNIFICANT WAVE HEIGHTS

Source: Williams, et al. (1980)

<u>Location</u>	<u>Time Period</u>	<u>Wave Probability</u>
A. Deep Water		
1. Point Conception (33.5°N, 120.4°W)	Annual	23%
	Max. Month - May	44%
	Min. Month - December	8%
2. Mexican Border (33.5°N, 120.4°W)	Annual	29%
	Max. Month-June	58%
	Min. Month-December	9%
B. Coastal Locations		
1. Point Hueneme	Annual (1961-1964, 1977)	1% & 4%
2. Point Mugu	Annual (1973-1974)	2%
3. Venice	Annual (1966)	0.1%
4. Huntington Beach	Annual (1972-1974)	0.5%
5. Oceanside	Annual (1977)	0.5%
6. Scripps Pier	Annual (1977)	0.5%
7. Ocean Beach	Annual (1977)	5%
8. Imperial Beach	Annual (1977)	0.1%

*TABLE IV.C.9.a.i-1

the least. The relatively small openings of most estuaries in Southern California, and the relatively high ability to divert a spill (particularly during the winter when many estuaries have their widest openings), makes the actual entrance of oil into them a relatively small probability.

According to the oil spill model, only one mainland segment (Number 31) has a 5 percent or greater probability of receiving a greater than 1,000 barrel oil spill within 30 days. The estuaries involved in this section, located in Ventura County, are the Santa Clara and Ventura river estuaries and Carpinteria Marsh, containing the endangered light-footed clapper rail and Beldings savannah sparrow. According to Table III.B.7.a-1, Ventura and Santa Clara Rivers are usually closed and Carpinteria Marsh has an extremely small opening. Under extreme winter conditions, the openings of the two rivers may enlarge to nearly 10 m (approximately 30 feet) and the marsh to 30 m (98 feet). Table IV.C.8.a.i-1 indicates booms may be able to divert oil from the entrances 92 to 56 percent (minimally) of the time, with the maximum diversion efficiency occurring during the winter (Williams, et al. 1980) when the entrances usually are their widest.

Because of the relatively narrow openings of the three estuaries within Segment 31 and the periods when oil diversion equipment will be operable, the probability of oil entering these estuaries during a spill is low. If we consider that the spill entering the estuary is close to 10,000 barrels, the biological impacts on the estuary will be high (Section IV.A.1.c).

ii. Conclusions: If a large oil spill were to enter an estuary, a high ecological loss would almost certainly result. The chance of a spill entering an estuary, however, is small. Exceptions to this may be several estuaries, including Mugu Lagoon, Anaheim Bay, lower Newport Bay, Mission Bay, San Diego Bay and, possibly eight others during the winter, which have wide mouths.

iii. Cumulative Impacts: The oil spill model for oil and gas development cumulative impacts indicates that 85 percent (11 of 13) of the 26-mile land segments have a 5 percent or greater probability of a hit with a large (greater than 10,000 bbl) oil spill within 30 days. As a worse case analysis, this section will consider those estuaries having a probability of at least 10 percent of a hit with a large oil spill (greater than 10,000 barrels). These estuaries and their hit probabilities are:

Goleta Slough	31
Carpinteria Marsh	20
Santa Clara River	20
Ventura River	20
Anaheim Bay	59
San Luis Rey River	12
Agua Hedionda River	12
Santa Margarita River	12
San Mateo Creek	12
San Elijo Lagoon	12
Buena Vista Lagoon	12
Los Penasquitos Lagoon	12
Batiquitos Lagoon	12

There is a high probability of a high ecological loss if a large oil spill were to enter an estuary.

The Alternative 1 section of the estuaries and wetlands impacts summarizes the relatively good ability to prevent a spill from entering most estuaries within the Sale area.

There are only three relatively unaltered estuaries remaining within Southern California: Mugu Lagoon, Anaheim Bay, and Tijuana Estuary. The rest have already undergone high ecological losses, primarily from development projects, and some are not likely to be allowed to recover within the next 25 years. However, as indicated by comments from the State Lands Commission, restoration projects are planned or underway for some estuaries. This will cause a greater possibility of impact from oil spills that enter a restored estuary. Of greater interest to the ecology of the Bight is whether the remaining three unaltered estuaries will be allowed to remain so. Will there be significant recovery in the others, or will they continue to be degraded? Present intentions and rules protecting estuaries may fall to development pressures within the next 25 years due to increased property value or changing public attitudes. Most of these decisions will be unaffected by OCS development.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills can adversely impact estuaries and wetlands by affecting the survival, reproduction, and repopulation of species that inhabit these areas. Therefore, the small increase in oil spills noted above would increase slightly the probability that Mugu Lagoon, Anaheim Bay, lower Newport Bay, Mission Bay, San Diego Bay and possibly other estuaries or wetlands would sustain high ecological losses.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. The additional time for oil to reach shore also would allow more time for oil spill cleanup and containment equipment to be mobilized. Adoption of Alternative 2 also would ensure that no platforms are placed within the Sanctuary. Thus, drilling muds, drill cuttings, formation water, vessel traffic, human intrusion, and noise generated during exploration and development would be reduced in the Sanctuary, but still could occur from activities resulting from oil and gas leases outside the Sanctuary. However, since there are no estuaries and wetlands near this area, adoption of this Alternative is not expected to reduce potential adverse impacts to these resources.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Therefore, Alternative 3 will reduce the probability of an oil spill reaching the relatively unaltered Goleta Slough which has an opening of less than 10 meters and which is closed from the sea for much of the year (see Table III.B.6.a-1). If oil entered Goleta Slough, a high ecological loss is probable.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Therefore, Alternative 4 will reduce the probability of an oil spill reaching the relatively isolated (from other estuaries) Ballona Creek which has a constant opening of 200 meters. If oil entered Ballona Creek, a high ecological loss is probable.

Alternative 5 would delete Tract 165 in the vessel precautionary area. therefore, Alternative 5 will cause a very slight reduction in the probability of a spill reaching some of the estuaries to the south in Orange and San Diego Counties. If oil entered an estuary, a high ecological loss is probable.

Cancelling the Sale (Alternative 6) would eliminate potential impacts while the Delay Alternative (Alternative 7) would postpone potential impacts.

b. Marine Reserves, Refuges, and Areas of Special Biological Significance

i. Alternative 1: The Marine Reserves, Refuges, and Areas of Special Biological Significance are designations intended primarily to protect intertidal and shallow water subtidal habitats. Consequently, the impacts from oil spills on these habitats are found in Sections IV.C.3-7 (particularly IV.C.4) and will not be covered further here. Much the same is true with the Biologically Sensitive or Unique Areas not covered by other categories (Table III.B.7.b-1); their coverage can be found in the same sections.

Any spills reaching an Area of Special Significance, and to a lesser extent Ecological Reserves and Marine Refuges, is considered to be harmful. The maximum probability of a violation i.e., a small spill of 50 to 1,000 barrels, was used for analysis. Those sensitive areas having a 5 percent probability of a hit within 30 days are shown in Table IV.C.8.b.i-1. The inner banks have thirteen sensitive areas, each with a 5 percent probability of a hit. The outer banks have five such sensitive areas. The Santa Barbara area has one or two with Santa Rosa Island counted twice.

ii. Conclusions: There is a high probability that at least one of the 21 areas of special biological significance covered in this section and listed on the previous page (Table IV.C.8.b.i-1) will be hit and harmed by an oil spill as the result of this Sale.

TABLE IV.C.8.b.i-1

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE, RESERVES
AND OTHER SENSITIVE AREAS HAVING A 5 PERCENT OR
GREATER PROBABILITY OF AN OIL SPILL HIT WITHIN 30 DAYS

<u>Significant Areas</u>	<u>50 to 1,000 BBBL Prob. (%)</u>	<u>1,000 to 10,000 BBL Prob. (%)</u>
Segment 35		
Bolsa Chica Ecol. Reserve	6	2
Seal Beach Natl. Wildl. Refuge	6	2
Segment 36		
Irvine Coast Mar. Refuge	7	3
Laguna Beach Mar. Refuge	7	3
South Laguna Beach Mar. Refuge	7	3
Niguel Marine Refuge	7	3
Dana Point Marine Refuge	7	3
Doheny Beach Marine Refuge	7	3
Newport Beach Marine Refuge	7	3
Heisler Park Ecol. Reserve	7	3
Segment 38		
Buena Vista Lagoon Ecol. Res.	8	4
San Diego Marine Refuge	8	4
Segment 39		
La Jolla Ecol. Reserve	5	2
Santa Rosa Island ASBS	7	3
Santa Cruz Island ASBS	17	6
Anacapa Island ASBS	13	5
San Nicolas Island ASBS	7	4
Santa Barbara Island ASBS	6	4
Santa Catalina Island ASBS	16	13
San Clemente Island ASBS	15	8
Tanner-Cortes Banks	17	10

iii. Cumulative Impacts: The oil spill model indicates that for cumulative spill probabilities from all existing and proposed oil and gas development, 85 percent (11 of 13) of the 26-mile land segments have a 5 percent or greater probability of a hit with a large oil (over 10,000 barrel) spill within 30 days. With only one exception (Mugu Lagoon to Latigo Point), every ASBS has a 5 percent or greater probability of receiving a hit with a small (500 to 1,000 barrel) oil spill. Table IV.C.8.b.iv-1 shows the sensitive areas listed in Table III.B.7.b-1 which have a 25 percent or greater probability of receiving a small (50 to 1,000 barrel) oil spill within 30 days. This separates out those areas which will definitely be prone to a spill. The areas which have a high probability for a small spill hit also have a high probability for a larger hit, over 1,000 bbl. The probabilities, in fact, decrease relatively little. Six of the sensitive areas are in the inner banks Sale area, four are located in the outer banks, while two to three (counting Santa Rosa Island twice) are located in the Santa Barbara area.

The effect other projects have on special significant areas depends upon how well present laws and intentions are followed. The Areas of Special Biological Significance are so valuable that they cannot withstand any human-induced alterations. The Refuges, Reserves, and Preserves are to maintain healthy intertidal and low subtidal areas and preserve good fishing. If these ideals are followed for the next 25 years, most of the areas should remain in relatively unaltered condition, barring catastrophies such as multiple oil spill hits.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills can adversely impact Marine Reserves, Refuges, and Areas of Special Biological Significance by affecting the survival, reproduction, and repopulation of species that inhabit these areas. Therefore, the small increase in oil spills noted above would increase slightly the probability that one of these areas would be harmed. Additionally, if the Biological Stipulation is not adopted, there could be a slight increase in potential adverse impacts to subtidal benthic communities in the ASBS's due to lack of identification surveys prior to oil and gas activities. These identification surveys allow examination or avoidance of special biological resources. Without these surveys, subtidal benthic communities in ASBS's are more likely to be harmed.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. This deletion would:

- (1) Elimination of platforms and the resulting drilling muds-cuttings, etc., within the boundary.
- (2) Increase in the length of time it would take an oil spill to reach the islands and shallow waters of the sanctuary.

TABLE IV.C.8.b.iv-1

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE, RESERVES AND
OTHER SENSITIVE AREAS HAVING A 25 PERCENT OR
GREATER PROBABILITY OF AN OIL HIT WITHIN 30 DAYS FROM
ALL OIL AND GAS ACTIVITY IN THE BIGHT

<u>Significant Areas</u>	<u>50 to 1,000 BBL Prob.</u>	<u>Over 1,000 BBL Prob.</u>
Bolsa Chica Ecological Reserve	99.5+	92
Seal Beach Natl. Wildlife Refuge	99.5+	92
Buena Vista Lagoon Ecological Res.	30	22
San Diego Marine Refuge	30	22
San Miguel Island ASBS	61	55
Santa Rosa Island ASBS	58	46
Santa Cruz Island ASBS	88	77
Anacapa Island ASBS	66	56
Santa Catalina Island ASBS	61	47
San Clemente Island ASBS	29	21
Tanner-Cortes Banks		

The minimum amount of time that will be gained is 4 to 5 hours. Most often, the amount of time required to reach shore, by increasing the buffer from 3 to 6 miles, will be much greater. Oil becomes less toxic over time, through weathering, and tends to dissipate. Adoption of Alternative 2 could reduce the toxicity and the amount of oil reaching shore. Perhaps even more important is the increased time available to contain or divert the oil away from this biologically and politically significant area. Further, the physical characteristics of Southern California seas are fairly good for handling an oil spill (See Section IV.C.8.a.i). The additional time and distance allowed to accomplish this could often make the difference between oil reaching or not reaching the shore, and shallow nearshore waters of the sanctuary.

According to the oil spill model, there is a 17 percent probability within 3 days and 30 percent probability within 30 days of a spill hitting the Marine Sanctuary as the result of Proposed Sale No. 68. Some of these spills will hit the islands and others will transverse across the sanctuary.

In short, eliminating the areas in Alternative 2 will increase the ability to prevent a high impact in terms of the significant legal designations ASBS, National Park, and Marine Sanctuary.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Therefore, the elimination of the Adjunct to the Santa Barbara Ecological Preserve will reduce slightly the probability of an oil spill reaching and adversely impacting the inner (northern) shores of Santa Cruz Island.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Therefore, Alternative 4 will reduce slightly the probability of an oil spill reaching and adversely impacting Point Fermin Ecological Refuge, Anacapa Island, and Catalina Island ASBSs.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Therefore, Alternative 5 may very slightly reduce the probability of an oil spill reaching the Areas of Special Biological Significance south of the Palos Verdes Peninsula (Table III.B.6.b-1).

Cancelling the Sale (Alternative 6) would eliminate potential adverse impacts while the Delay (Alternative 7) would postpone potential adverse impacts.

9. Marine Sanctuaries

a. Alternative 1: The Channel Islands National Marine Sanctuary is the only marine sanctuary in California that is likely to be impacted by Proposed Sale No. 68. The most vulnerable resources within the Sanctuary are seabirds, pinnipeds, intertidal and subtidal benthic organisms. Oil spills and oil spill cleanup efforts may adversely impact seabirds and pinnipeds by disrupting their foraging, breeding, haulout or nesting areas, and by affecting the survival and health of individuals. Additionally, vessel traffic,

human intrusion and noise generated during exploration and development may affect seabirds and marine mammals. Therefore, these resources in the Marine Sanctuary are expected to sustain low to moderate ecological losses, although the potential for a high ecological loss exists. For a more specific discussion, see Sections IV.C.6 and IV.C.7.

Oil spills and oil spill cleanup efforts also can adversely impact benthic species by affecting their survival, reproduction and repopulation. Platforms, pipelines, drilling muds, cuttings and formation waters also may affect subtidal benthic species. Therefore, low to moderate ecological losses to intertidal and subtidal benthic resources in the Marine Sanctuary could occur. For a more specific discussion, see Section IV.C.4. Minor impacts to recreational boating, fishing, diving, and cultural resources also could occur.

b. Conclusions: Impacts from Proposed Sale No. 68 could alter the character of the Channel Islands National Marine Sanctuary by impacting seabird, pinniped, intertidal and subtidal benthic resources. The most probable ecological loss will be low to moderate, although the potential for a high ecological loss exists. Minor impacts to recreational boating, fishing, diving, and cultural resources also could occur (see Section IV.C).

c. Cumulative Impacts: Moderate to high ecological losses are likely to impact several of the most important resources within the Channel Islands National Marine Sanctuary, specifically, seabird and pinniped populations. The diving seabird (for example, cormorant) and fur seals are most vulnerable. However, most seabird and pinniped species utilizing this area will probably be affected. To a lesser extent, intertidal and subtidal benthic resources are also likely to be deleteriously impacted. Additionally, the key characteristics of the Northern Channel Islands, which were primary factors in having the area designated a marine sanctuary (and a National Park) could be significantly altered by cumulative impacts.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see Explanation in Section IV.C.1.d). Oil spills can adversely impact the Channel Islands Marine Sanctuary by affecting the survival, reproduction, and repopulation of species that inhabit this area. Therefore, the small increase in oil spills noted above would increase slightly the probability that this area could sustain low to moderate or possibly high ecological losses. Additionally, if the Biological Stipulation is not adopted, there could be a slight increase in potential adverse impacts to subtidal benthic communities in the Sanctuary due to lack of identification surveys prior to oil and gas activities. These identification surveys allow examination or avoidance of special biological resources. Without these surveys, subtidal benthic communities in the Channel Islands National Marine Sanctuary are more likely to sustain low to moderate or possibly high ecological losses.

Alternative 2 will decrease the risk to resources within the Sanctuary. Deleting the tracts within 6 nm of the islands will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, additional evaporation, dissolution and weathering of the oil would occur, further reducing the quantity and toxicity. Also, it would allow more time for oil spill cleanup and containment equipment to be mobilized. The oceanographic conditions off Southern California are fairly good for handling an oil spill. With this additional time, the chances of protecting sensitive marine resources are greatly increased.

Specifically, the seabird, pinniped and benthic resources would be less likely to be directly contacted by the oil. Even if the oil did reach these resources, there would be less of it; it would be more weathered; and it would be less toxic.

If Alternative 2 is adopted, there will be a reduction in the potential impacts on bottom communities and possibly intertidal communities from long term chronic pollution resulting from oil operations.

Increasing the distance between OCS development and these resources would also reduce the vessel traffic, human intrusion and noise generated during exploration and development. Potential disruption of critical breeding and nesting activities for seabirds and pinnipeds would, therefore, be reduced. Also, the risk of damage from platforms and pipelines, to hard bottom subtidal areas, would be eliminated. Lastly, deleterious effects from drilling muds, cutting and formation water would be reduced.

Potential impacts to recreational boating, fishing and diving within the Sanctuary will be reduced by adopting Alternative 2. Cultural resources will not be subjected to the jeopardy of exploration and development activities (see Section IV.C.19).

The unusual and valuable resources (intertidal, subtidal benthos, pinnipeds, seabirds, recreational and cultural) were major reasons the area was designated as a National Marine Sanctuary and a National Park. Adopting Alternative 2 (deleting tracts within the Sanctuary) would help maintain the characteristics and qualities that were prime reasons for designating the Northern Channel Islands as a National Marine Sanctuary and a National Park.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Therefore, Alternative 3 will reduce slightly the probability of an oil spill reaching and adversely impacting the inner shores of Santa Cruz Island and shelf of the Channel Islands Marine Sanctuary near it.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion would alter the oil and gas activities in this area in a manner similar to the changes that would occur in the Sanctuary if Alternative 2 were adopted (see discussion above). Therefore, Alternative 4 will reduce slightly the probability

of an oil spill reaching and adversely impacting Anacapa Island and shelf of the Channel Island Marine Sanctuary near it.

Alternative 5 would delete Tract 165 in the vessel precautionary area. Alternative 5 will cause no change in impacts on Marine Sanctuaries.

Cancelling the Sale (Alternative 6) would eliminate all Sale No. 68 impacts to the Sanctuary. Delaying the Sale (Alternative 7) would postpone the potential impacts.

10. Terrestrial Resources

a. Alternative 1: If an oil spill should strike shore, terrestrial plants and animals may be killed outright by the spill or, inadvertently, as a result of cleanup efforts that will take place after a spill. However, the extent of these impacts should be small.

The amount of habitat destruction caused by construction of onshore pipelines depends upon the extent existing pipelines and rights-of-ways are used.

The Santa Barbara Area will have two pipelines, one already in existence, and the third, by Point Conception, assumed to be in existence by the time oil from Proposed Sale No. 68 is ready to be transported to shore. Obviously, no impact to terrestrial resources will result from pipeline construction if the construction has been already completed.

The Inner Banks area has several already existing pipelines crossing the shoreline in the Los Angeles-Long Beach Harbor area. A new pipeline resulting from Proposed Sale No. 68 is projected to come ashore at El Segundo (Transportation Scenario 1). Although this area is highly developed, industrially and domestically, the endangered blue El Segundo butterfly is located here. (For a discussion of endangered species, see Section IV.C.7.)

For coverage of the probabilities of a hit from an oil spill, based upon the oil spill model, refer to the Intertidal Section (IV.C.4).

b. Conclusions: Terrestrial biological resources are expected to sustain low ecological loss from Proposed Sale No. 68.

c. Cumulative Impacts: Oil activities have and will continue to have a nearly negligible impact, in comparison with impacts on the terrestrial biological resources from other activities within the area. Refer to Figure III.B.8-1 for an example of the remaining natural terrestrial environment in Southern California nearly 10 years ago.

The only exception to the prediction of low ecological loss from terrestrial biological resources is the possible land pipeline from Point Conception to Los Angeles. Impacts along the way of the pipeline would be high to the remaining natural habitat.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills and oil spill cleanup efforts can disrupt terrestrial biological resources. Therefore, the small increase in oil spills noted above would increase slightly the probability that terrestrial biological resources could sustain low ecological losses.

Alternative 2 would delete tracts within 6 nm of the Channel Islands National Marine Sanctuary. There is expected to be no significant difference in the impacts to terrestrial biological resources as the result of Alternative 2. This, of course, hinges upon the assumption that no onshore activities will occur on the islands of the sanctuary irregardless of which alternative is adopted. Were activities to occur on these sensitively balanced ecological systems, impacts could be extremely severe.

Alternative 3 would delete tracts in the adjunct to the Santa Barbara Channel Ecological Preserve. There is expected to be no significant difference in the impacts to terrestrial resources as the result of Alternative 3 because the amount of onshore oil related construction or activities will be unchanged.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. There is expected to be no significant difference in the impacts to terrestrial resources as the result of Alternative 4 because the amount of onshore oil related construction or other activities will be unchanged.

Alternative 5 would delete Tract 165 in the vessel precautionary area. There is expected to be no significant difference in the impacts to terrestrial resources as the result of Alternative 5 for the same reason given for Alternatives 3 and 4.

Cancelling the Sale (Alternative 6) would eliminate any Sale related impacts while Delaying the Sale (Alternative 7) would simply postpone them. In the latter case, impact levels at a later date should be comparable to those experienced if the Sale were held as scheduled.

11. Coastal Economy

a. Alternative 1: Economic and demographic forecasts of the effects of Proposed Sale No. 68 activity were made using the Curtis Harris multi-region, multi-industry model. Proposed Sale No. 68 would stimulate investment and would generate jobs in the Southern California region. Table IV.C.11.a-1 shows estimates of yearly changes in the number of jobs due to Proposed Sale No. 68 and indirect and induced economic activity. This estimate does not include jobs in the transportation sector which are discussed in Section IV.A.3. The direct employment in offshore oil and gas activities is shown in Column A of this table. Column B shows the total estimated direct, indirect, and induced employment. Jobs which are expected to be filled by transient labor are not included in these estimates. Examples of transient labor are the drilling crews that live onboard vessels or reside near the local port of origin.

Employment increases should peak around 1990 and decline substantially by the year 2002. In all the county labor markets that were examined, employment increases were less than 1 percent over the projected base. The Harris Model predicts that the greatest relative impacts in the study area would occur in Santa Barbara and Ventura counties where the estimated peak employment increases are 0.58 and 0.27 percent over total projected employment, respectively. The employment sectors showing the largest gains would be construction, finance, retail sales, medicine, education, and government. Additionally, manufacturing employment would be stimulated in the Los Angeles area.

The introduction of OCS-related investment to the region generates direct and multiplier effects in many sectors of the economy. The Harris Model assumes that most of the platform fabrication and other manufacturing and construction activities will take place in the Southern California region. It also assumes that the demand for business services would be in the county where oil and gas is landed. Because of these assumptions, the Harris Model results should be viewed as a high-impact case. (An alternative analysis of employment and population is presented at the end of this section.)

Harris model forecasts of the peak year increase in personal income, private investment, value added, state and local government purchases, and gross regional product are given in Table IV.C.11.a-2. The model predicts a sudden, short-term increase in economic activity in Santa Barbara County and relatively modest increases in the other counties studied. In Santa Barbara County, private investment is projected to rise by 12.0 percent during 1987, with a subsequent increase in gross regional product of 1.7 percent in 1992. In the other affected counties, the change in private investment is small, resulting in a less than a 1.0 percent rise in gross regional product. Estimated per capita income changes, which are included in the tables in POCS Technical Paper No. 81-3 (Dowling, 1981), are immaterial. The economic indicators show that, in an absolute sense, Los Angeles County will experience the largest economic gains; however, the effect of these impacts is small when they occur in a large and diverse economy such as that of Los Angeles County. A comparison of the effects relative to existing economic activity reveals that Santa Barbara County should feel the greatest impact. In that county, value added (averaged across all industries) and gross regional product could increase by about 2.0 percent during the peak of activity.

TABLE IV.C.11.a-1
CHANGES IN NUMBER OF JOBS DUE TO PROPOSED
SALE NO. 68 ACTIVITY
(CONDITIONAL MEAN RESOURCE ESTIMATES)

YEAR	1987		1992		1997		2002	
	A	B	A	B	A	B	A	B
COUNTY								
Santa Barbara	100	632	10	843	10	229	10	43
Ventura	95	807	10	803	10	172	10	-242
Los Angeles	161	472	98	2,089	32	1,218	32	789
Orange	39	212	53	622	28	313	28	174
San Diego	0	77	0	169	0	107	0	98
REGIONAL TOTAL	395	2200	171	4526	80	2039	80	862
CALIFORNIA	395	1876	171	4786	80	2826	80	1734

A denotes estimated direct employment

B denotes the total of direct and induced employment

Source: Curtis Harris Model, 1980.

TABLE IV.C.11.a-2
CHANGES IN VARIOUS ECONOMIC COMPONENTS
FOR THE YEAR 1992 DUE TO PROPOSED SALE NO. 68 ACTIVITY
(THOUSANDS OF 1967 DOLLARS)

	Personal Income	Private Investment ^a	Value Added	State and Local Government Purchases	Regional Product
Santa Barbara	16,336	97,955	57,383	2,534	58,878
Ventura	16,450	16,314	55,417	2,764	57,064
Los Angeles	46,224	150,904	136,576	8,504	142,000
Orange	12,648	37,994	30,628	2,322	31,964
San Diego	3,796	270	4,392	713	4,800
REGIONAL TOTAL	95,454	303,437	284,396	16,837	294,706
CALIFORNIA	95,488	303,436	284,352	16,840	---

^aThese values are for the year 1987.

Source: Curtis Harris Model, 1980

TABLE IV.C.11.a-3

SUPPLEMENTARY ANALYSIS - EMPLOYMENT AND POPULATION CHANGES
 ASSOCIATED WITH PROPOSED SALE NO. 68 ACTIVITY
 (BASED ON CONDITIONAL MEAN RESOURCE ESTIMATES)

Year	New Resident Direct Employment	New Resident Indirect and Induced Employment	Total New Resident Employment	Total Population Change from Base Projection
1982	55	91	146	336
1983	246	406	652	1,499
1984	347	573	920	2,116
1985	372	614	986	2,268
1986	406	670	1,076	2,475
1987	393	648	1,041	2,394
1988	346	571	917	2,109
1989	287	474	761	1,750
1990	282	465	747	1,718
1991	219	361	580	1,334
1992	173	285	458	1,053
1993	80	132	212	488
2006	80	132	212	488

Source: BLM Estimates, 1980.

The results of the supplemental analysis would show that minor economic impacts are expected to occur in this area because Proposed Sale No. 68 related construction and manufacturing activity would occur in other regions of the U.S. and possibly in foreign locations. In this case, the effects would be distributed throughout the U.S. or international economy rather than being concentrated within the Southern California region.

Since many analysts believe that platform fabrication may occur at a foreign location, the Harris Model results may be viewed by some as an overstatement of U.S. economic activity generated by Proposed Sale No. 68. Using simplifying assumptions, an alternative estimate of employment and population impacts was made. This estimate assumes that much of the platform fabrication and the business services demand would occur outside California. Using an employment multiplier suggested by county business patterns, indirect and induced employment was derived. Table IV.C.11.a-3 shows the results of this alternative analysis.

(The population changes also reported on this table are discussed in Section IV.C.12.) The distribution of employment gains among the counties studied is as follows: Los Angeles, 51.0 percent; Santa Barbara 17.0 percent; Orange, 15.0 percent; Ventura, 12.0 percent; and San Diego, 5.0 percent. A comparison of the Harris Model with the supplemental analysis reveals that the Harris Model results range from two to ten times greater.

b. Conclusions (Alternative 1): A significant, short-run expansion in regional economic activity is expected. Value-added gains would occur principally in the petroleum mining, construction, transportation, and finance sectors. Employment in Santa Barbara and Ventura counties and the Los Angeles area would be stimulated. No measurable effect on personal income is expected to occur.

Some of the employment created in the petroleum sector and especially the secondary employment would provide jobs for unemployed and underemployed persons in the region which is a beneficial effect. To some extent, the impact of OCS employment will be to prevent unemployment in the region's traditional oil-field jobs; however, the total effect on unemployment cannot be determined. The Sale-related investment would have positive economic effects on the region. Assuming that much of the investment occurs in Santa Barbara County, the effect will be to change the nature of economic activities in the area. Growth in historically dominant industries would not occur.

c. Cumulative Impacts (Alternative 1): As a result of cumulative State and Federal offshore oil and gas activities and the projects at Vandenberg Air Force Base, the non-urban portions of the study area (principally Santa Barbara and Ventura counties) are expected to experience pressures to urbanize. Urbanization could cause the mix of industries to change, resulting in manufacturing and construction replacing the historically more dominant agricultural industry. Communities have the ability to control and direct onshore growth to a certain extent through planning programs which may include zoning designations. One important mechanism for controlling impacts is the local coastal program (LCP), which is concerned with land resources, residential development, industrial development, and energy facilities siting. LCPs contain land use plans and zoning ordinances which form the basis for permitting decisions.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional changes to coastal economy are anticipated because none of the stipulations bear any relationship to coastal economy.

Alternative 2 would delete 13 complete and 24 partial tracts located within the Channel Islands National Marine Sanctuary. If these tracts were not leased, the potential economic effects of Proposed Sale No. 68 could be lessened. However, based upon a qualitative estimate of resources and associated development activity provided by USGS, no measurable change in economic activity is expected to result from not leasing within the sanctuary area. The estimated socio-economic impact of Alternative 2, then, is the same as that described for Alternative 1.

Alternative 3 would delete the 3 complete and 5 partial tracts that comprise the Santa Barbara Channel Ecological Preserve Buffer Zone. Deletion of the Buffer Zone could reduce the potential economic effects from Proposed Sale No. 68. The qualitative estimate of resources and associated developmental activity provided by USGS does not permit the measurement of changes in economic activity from this alternative. The estimated socio-economic impact of Alternative 3, then, is the same as Alternative 1.

Alternative 4 would delete tracts adjacent to Santa Monica Bay. This deletion could result in a reduction of economic activity from Proposed Sale No. 68. Investment in OCS development could be reduced by 8 percent, which could result in a minor reduction in the socio-economic impacts associated with the Sale.

Alternative 5 would delete Tract 165 in the precautionary area. This deletion could result in a negligible change in the economic activity expected from Proposed Sale No. 68. The socio-economic impacts from this alternative are expected to be the same as those in Alternative 1.

Alternative 6 would cancel the Sale. The activity described for the proposed action would not occur. None of the local economic impacts discussed in this section would occur. The implications of the No-Sale alternative on the national energy situation are discussed in Section II.B.3.

Alternative 7 would delay the Sale. The impacts described in this section could occur at a future date; however, the relative significance of impacts may vary due to changes in future economic activity. For example, the amount of economically recoverable resources could be increased if newly arising technologies made recovery more efficient.

12. Demography

a. Alternative 1: According to the Harris model, Proposed Sale No. 68 would generate both direct and indirect employment. The availability of employment may attract job seekers and their families to the Southern California area. The proposal is expected to create about 400 new

jobs in 1986 (not including jobs in the transportation sector) which is the peak year of direct employment. Employment should decline after the exploration and development phase is complete. Operations employment associated with offshore facilities may total less than 100 jobs. There would also be an increase in secondary employment in business services required by the oil industry. The largest gains in employment are expected in the retail sales sector with significant gains also occurring in the construction, manufacturing, and medical and educational institutions sectors. Total employment at the peak year (including direct, indirect, and induced employment) is estimated at 4,500 jobs.

POCS Technical Paper No. 81-3 (Dowling, 1981) gives the model results and the percentage change from baseline conditions.

Attendant population increases may occur in urban areas as a result of increased economic activity. Peak year (1992) estimated population increases by county are: Santa Barbara, 2,027; Ventura, 1,651; Los Angeles, 4,270; Orange, 1,086; and San Diego, 417. The most significant increases would be those occurring in the less urbanized counties of Santa Barbara and Ventura; however, it is not possible to determine which communities would experience the anticipated growth. The rate of change for the peak year in Santa Barbara and Ventura Counties is also minor (0.58 and 0.28 percent, respectively). The total estimated population change related to new employment as reported by the Harris Model for the five-county study area is shown in Table IV.C.12.a-1. Table IV.C.12.a-2 shows the differences between these projections and the baseline projections. In every county, the projected population increase is less than 1.0 percent. Table IV.C.11.a-3 shows the population estimates based on the supplementary analysis of employment changes. It is assumed that about 51.0 percent of these population changes would occur in Los Angeles County where they would be absorbed into the large socio-economic base. The remaining population increase, numbering about 1,200 in the peak year, would cause relatively minor impacts in the other four counties studied. Depending upon the location of support activities, Southern California versus the rest of the nation, population increases could range from 2,475 to 9,500.

b. Conclusions (Alternative 1): Population changes associated with Proposed Sale No. 68 activity are expected to be small. The population increase of 9,451, which is distributed over a five-county area, represents a 0.07 percent increase over the projected base at the peak year.

c. Cumulative Impacts (Alternative 1): The counties of Santa Barbara and Ventura anticipate significant population increases between 1980 and 1986 as a result of the Space Shuttle and Missile X programs at Vandenberg Air Force Base. A total civilian population increase of approximately 22,000 persons has been estimated (General Research Corporation, 1980) for these two projects. Taken by themselves, these two projects represent an average annual increase of 1.0 percent over the State of California population projections for Santa Barbara County for the six-year period, 1980-1985. (The Harris Model base projections already include population growth predicated upon employment associated with these two projects.) The population growth associated with Proposed Sale No. 68 is anticipated to occur when these other projects

TABLE IV.C.12.a-1

POPULATION FORECASTS WITH PROPOSED SALE NO. 68
(CONDITIONAL MEAN RESOURCE ESTIMATES)

COUNTY	YEAR					
	1982	1987	1992	1997	2002	2007
Santa Barbara	320,364	339,813	353,447	352,927	361,758	380,718
Ventura	542,471	610,686	670,772	718,627	768,703	828,704
Los Angeles	7,353,991	7,932,590	8,566,074	9,234,050	9,963,962	10,793,306
Orange	1,963,020	2,126,294	2,280,463	2,419,349	2,565,495	2,739,514
San Diego	1,918,335	2,165,018	2,392,195	2,596,488	2,789,223	2,986,523
REGIONAL TOTAL	12,098,281	13,174,401	14,262,951	15,321,441	16,449,141	17,728,765
California	23,791,756	25,985,992	28,230,528	30,181,756	32,198,200	34,468,896

Source: Curtis Harris Model, 1980.

TABLE IV.C.12.a-2

POPULATION CHANGES ASSOCIATED WITH PROPOSED
SALE NO. 68 ACTIVITY
(CONDITIONAL MEAN RESOURCE ESTIMATES)

County	1987 Change	1992 Change	Percent Increase*	1997 Change	Percent Increase*
Santa Barbara	1,540	2,027	0.58	544	0.15
Ventura	1,682	1,651	0.25	353	0.05
Los Angeles	1,002	4,270	0.05	2,480	0.03
Orange	379	1,086	0.05	542	0.02
San Diego	240	417	0.02	261	0.01
REGIONAL TOTAL	4,843	9,451	0.07	4,180	0.03
California	4,544	10,060	0.04	5,828	0.02

Source: Curtis Harris Model, 1980.

*Increase is the amount Proposed Sale No. 68 could add to the projected base population (Table III.D.3.a-1).

are on the decline; nevertheless, welfare losses associated with infrastructure and social stresses may be generated by the combination of these activities. Population growth may cause stress due to shortfalls in public services and facilities and housing. These types of impacts are discussed in subsequent sections.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional changes in demography are anticipated because none of the stipulations bear any relationship to demography.

Alternatives 2, 3, 4, and 5 as described above under Coastal Economy would result in generally the same population impacts as Alternative 1.

Alternative 6 would cancel the Sale. Additional economic activity which generates population growth would not occur. The baseline projections of population would describe future population in the Southern California area.

Alternative 7 would delay the Sale. The impact on population would most likely be delayed for a period of time equal to the period of delay; however, if new technologies were developed, the oil and gas production profile may shift and the resulting pattern of economic activity and population growth may change.

13. Public Facilities and Services

a. Alternative 1: Proposed Sale No. 68-related population changes may result in a demand for additional public and private services and facilities. The magnitude of impact given an increase in demand varies due to different service capacities and funding abilities among communities. The extent of fiscal impacts is related to the balance between industrial, commercial, and residential development in the tax base. Residential development is usually considered a drain on resources; however, new commercial and industrial development may cause a positive impact on tax revenues. The Harris Model cannot precisely predict the change in the tax structure given the uncertainties in the future economic and political environment. As an adjunct to the Harris Model forecasts, a study was done by Blaney-Dyett, Urban and Regional Planners, under contract to the Bureau. The study examined three categories of community services in Santa Barbara and Ventura counties. The subject study is published as POCs Technical Paper No. 81-4 (Blaney-Dyett, 1981) and is available from BLM. Although the Blaney-Dyett study evaluated the potential ability of local governments to finance new or expanded public facilities, the net effect cannot be determined due to the lack of information concerning revenue attributed to expansions in the commercial and industrial tax base. Increases in demand for public services will only be generated if new business and industry moves into the area. The population and employment changes directly linked to offshore operations are minimal. The major reason for public service impacts is secondary and induced activity. The impact on services outside the two-county area was not the subject of a detailed study, because the relative impacts expected to occur there are believed to be minor.

The Blaney-Dyett study reallocated the Harris Model generated population between the two counties based on past population trends, predicted share of future regional growth, accessibility to onshore oil and gas processing facilities, intercounty commuting patterns, and physical and institutional constraints to growth. Their analysis focuses on the peak year (1992) population of which 70 percent was allocated to Ventura County and 30 percent to Santa Barbara County.

For Santa Barbara County, the Blaney-Dyett study found that OCS population could increase deficits in water supplies by between 2 and 4 percent along the south coast. Impacts on wastewater facilities may not be significant, as only one plant would be affected. Also, adequate classroom capacity would probably exist throughout the county school system. The incremental costs of expanding community services to meet OCS-related needs could range from \$243,000 for a mid-range resource find to \$557,000 for a high resource find. It is estimated that 43 percent of these costs would be attributable to increasing water supplies, 9 percent to expanding treatment plant capacity, and the remaining 48 percent to educating school children (operating costs).

In Ventura County, OCS development could contribute to potential deficits in water supply and sewage treatment capacities. OCS-related development could increase a future shortfall in school capacity by 10 percent. The combined costs for additional services and facilities could range from \$2.7 to \$6.3 million with a mid-range and high find, respectively. Eighty-two percent of these costs is estimated for new school facilities and staff. Expanding water and wastewater systems could each represent about 8 percent of the total estimated costs.

Analyses of the information contained in the oil spill model (Section IV.A.1) indicates that the probabilities of one or more oil spills greater than 1,000 or 10,000 barrels contacting power plants within 30 days is less than 6 percent. This analysis is based on Transportation Scenarios Nos. 1 and 2 in the oil spill model. Power plants with submerged ocean cooling water systems and within the proposed area are: 1) Los Angeles Department of Water and Power, power plants at Wilmington, Seal Beach, and Playa del Rey; 2) Southern California Edison (SCE) power plants at El Segundo, Long Beach, Oxnard, Redondo Beach, Huntington Beach, San Diego, Huntington Beach, San Diego Gas and Electric (SDGE) power plant at San Diego Bay; and 3) Joint SCE-SDGE nuclear power plant at San Onofre.

Power plant operators do not anticipate any problems from oil spills, however, should oil infiltrate the cooling water intake and become a problem, conventional power plants could shut down in a few minutes. The San Onofre nuclear power plant would require a short time to convert to an auxiliary cooling system and to shut down. Fouling of the cooling intake system would require a 2 or 3 day power plant shutdown (Blouey, 1981).

b. Conclusions (Alternative 1): Population growth resulting from Proposed Sale No. 68 could place some burdens on public services and facilities in Santa Barbara and Ventura Counties. The economic impact of providing additional community facilities would fall upon local governments. The supply of electricity could be disrupted for three days if a major oil spill occurs.

c. Cumulative Impacts (Alternative 1): The previous offshore leasing projects and the programs planned at Vandenberg Air Force Base amplify the problems associated with accommodating new residents. The combined effect of all new activities on population could be as many as 31,500 persons, with most of the development pressure occurring in Santa Barbara and Ventura counties. The baseline population projections against which OCS population increases were compared included estimates for other future, large-scale projects. The incremental impacts attributable to OCS development, then, represent the expected change and/or cost given concurrent expansion in other sectors of the economy.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills can disrupt the supply of electricity by fouling the cooling water intake system. Therefore, the small increase in oil spills noted above would increase slightly the possibility that the supply of electricity could be disrupted for three days by a major oil spill.

Alternatives 2, 3, 4, and 5 as described above under Coastal Economy are estimated to have an impact on public facilities and services comparable to those associated with Alternative 1 due to the similar population estimates.

Alternative 6 would cancel the Sale. Would eliminate the impacts just described.

Alternative 7 would delay the Sale. Would generally be the same as for the proposal, except that they would occur at a future date.

14. Coastal Land Use

a. Alternative 1: Impacts on land use will result from the demand for land for onshore facilities necessary for the exploration, development, production and transportation phases of OCS oil and gas activity. In addition, there may be land-use impacts caused by the physical demands for land for the additional population. This could result in an increase in the demand for housing, schools, recreation sites, transportation services and city services (see Section IV.C.11, Demography).

While population increases due to OCS development are expected to be negligible, and thus no strain on water supplies except in areas where water supplies are already constrained, additional water requirements will be created at the OCS-related facilities themselves. Operations bases will require approximately one million gallons of fresh water (largely non-potable) for each exploratory or development well which is drilled.

Any development resulting from the proposal (industrial or other), which may occur within the coastal zone, will be subject to the land-use controls of the local jurisdictions. These land-use controls will be identified and implemented through the Local Coastal Programs (LCP) and Port Master Plans.

The following discussion deals with the physical impacts on onshore facilities for OCS development and is based on the NERBC/RALI Onshore Facilities Related to Offshore Oil and Gas Development Factbook (Nov., 1976). It is important to realize that there is OCS development in the area at present, and many of the necessary onshore facilities are already in existence.

Temporary Service Bases are staging areas from which equipment, supplies and personnel can be ferried by supply boats and helicopters to offshore operations during the surveying and exploratory or development drilling stage. They require 5-10 acres of flat land near an all-weather harbor, 200 feet of wharf on the waterfront with 15-20 feet of water depth at the pier and 5,200,000 gallons/ rig/year of fresh water during drilling.

Permanent Service Bases are set up as development and production phases get underway with a commercial find. Basically, these bases perform essentially the same functions as temporary bases. The principle differences are size, and intensity of activity. They require 50-75 acres of flat land adjacent to an all-weather harbor, 400 feet of wharf on the waterfront with 15-20 feet of water depth and 8,200,000 gallons/platform/year of fresh water during drilling.

Repair and Maintenance Yards will probably be required to provide services for offshore vessels and equipment. They will require locations accessible to road, rail, and air transportation. These services could be rendered by existing marine repair facilities and these facilities could experience expansion in direct relation to the amount of offshore activity.

Bases Supporting Platform and Pipeline Installation may be located separate from or contiguous to other service bases. Those bases will require flat land for waterfront warehouse space, pipe-coating yards, service/maintenance facilities for the vessels and barges, and possibly land for a helipad. The amount

of land required depends on the extent of the commercial find, but at least 5-10 acres and a minimum of 200 feet of marginal wharf is needed.

Pipelines and Landfalls for bringing the oil onshore. Landfalls require a 50-100 foot right-of-way, and, if needed, 40 acres for a pumping station or 60 acres for a tanker and barge terminal. Land use impacts are dependent upon whether the pipe must cross marshes, barrier beaches, open fields or urban areas. This could disrupt other land uses and life cycles within marshes.

Depending on the location and size of the offshore find, how the oil and gas will be transported and the ultimate destination of the fuels, the following facilities may be constructed onshore:

Partial Processing Facilities would require 15 acres of flat land per 100,000 barrels of petroleum mixture processed. Ten thousand gallons of water per month would be required.

Gas Processing and Treatment Plants would require 50-75 acres of flat land and 200,000 gallons of water per day.

Marine Terminals would require 30-100 waterfront acres (mainly for storage tanks) and a waterfront with 50-60 foot depth of sheltered water at the pier or mooring bouy.

Refineries would require 1,000-1,500 acres of clear flat land zoned for industry, and 10.5 million gallons of water per day.

The California Coastal Zone Management program encourages industrial facilities to locate or expand within existing sites unless they cannot feasibly be accommodated. Even then, there are provisions which would allow for development if: 1) alternative locations are infeasible or more environmentally damaging; 2) to do otherwise would adversely affect the public welfare; 3) adverse environmental effects are mitigated to the maximum extent feasible. Coastal development permits will be subject to approval by the Coastal Commission until Local Coastal Plans and/or Port Master Plans are completed and approved. Therefore, since the facilities will probably be sited in port areas and/or within existing industrial-zoned areas, significant change in land use is not anticipated.

Housing units required in the Southern California counties as a result of Sale No. 68 direct and indirect activity is expected to be 3,514 during the peak year of 1992 based on a population increase of 9451 (POCS Technical Paper No. 81-3, (Dowling, 1981) and 2.69 people/housing unit (General Research Corporation, 1980). This would represent an increase of 0.085 percent over the 4,152,449 housing units available in 1975 (Sale No. 48 Final EIS). This would not be a significant increase for the region, and the number of additional housing units for each county are as follows: Los Angeles County, 1,587; Orange County, 404; Santa Barbara County, 754; Ventura County, 614; and San Diego County, 155. In addition to housing, there may be need for hospitals, schools, and other public service facilities in specific areas.

Presently, there is no way to project the number of industrial and commercial activities that may be required to meet the increased employment and population needs other than identifying those sectors in the Harris Model which show projected increases. However, this would only indicate that a particular sector is expanding, not how many facilities that sector would require. Refer also to Section IV.C.11 to 18 for discussions of related impacts.

b. Conclusions: Due to the level of OCS activity and other industrialization in the Sale area, it is expected that little adverse impact can be anticipated to the land use in the area from Proposed Sale No. 68. The housing situation will remain as it is currently with high prices and limited availability of affordable housing. The pressure for housing caused by Proposed Sale No. 68 generated population increases will have minimal impact except in areas where resources are already constrained.

c. Cumulative Impacts: Cumulative impacts on land use will consist of potential impacts from Proposed Sale No. 68 added to the impacts associated with previous offshore oil and gas development, and all other projects which affect land use, such as the proposed LNG facility, Space Shuttle and Missile X System, and onshore oil and gas development. Previous OCS activity including onshore secondary land use are anticipated to require about 68,000 acres for the five county area. This figure includes about 17,000 areas strictly from Sale No. 48. The Space Shuttle and the Missile X projects primarily affect Vandenberg AFB, but will require approximately 1,500 housing units in the local areas for the construction workers. The direct and indirect work force will, however, require about 8,000 housing units which will have a severe impact on the local areas in North Santa Barbara County where most of the additional population is expected to reside. Thus, Proposed Sale No. 68 impact on land use, although relatively minor by itself, will tend to put a strain on future development when combined with the other proposed activities for Southern California.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.5, no additional adverse impacts to land use are anticipated because none of the stipulations bear any relationship to land use.

The deletion of tracts in Alternatives 2, 3, 4, and 5 would not change the adverse impact on onshore land use. Because of existing industrialization in the Sale area and declining onshore production most of the required facilities are already in place and are capable of handling any offshore production. Any land use changes are expected to be the result of needs generated by previous offshore lease sales. None of the alternatives (2-5) significantly change the number of wells to be drilled or platforms expected to be built as a result of this proposed lease sale and, thus, the number and nature of required onshore facilities and other coastal land needs will remain the same as in Alternative 1.

Cancelling the Sale, Alternative 6, would, of course, eliminate all sale-related impacts.

Delaying the Sale, Alternative 7, would postpone potential impacts. It is possible that during such a delay there would be an improvement on safety and cleanup equipment.

15. Recreation

a. Alternative 1: Recreation is a very personal activity thus, the effects of the impacts on recreation tend also to depend on the opportunity being furnished, the area impacted and the size or quantity of the impacting agent.

An impact on recreation will be noticed where oil spills contact the shoreline. Oil fouling could result from chronic spillage or major accidents, such as the 1969 Santa Barbara Spill or the AMOCO CADIZ Spill. An impact could also be noticed offshore in areas of recreational boating, and in the underwater parks. If large quantities of oil impact the shore, damage to marine life could occur, and all water contact and general beach-use activities would tend to be stopped until the cleanup was completed. The general impact of oil spills on harbors, ports and marinas will be a reduction in the amount of boating which takes place at that particular harbor, and could mean the closure of the harbor by a boom to prevent oil from entering and contaminating the hulls of the boats.

Beach fouling and surface slicks could result from chronic spillage. This would be relatively minor compared to the major accidents, but could be a continual nuisance to the recreationalists. The magnitude of these impacts would be comparable to those from the natural seeps. The overall impact on the beaches would be very minor, and would tend to reduce beach use at a particular site on a day-to-day basis, as is seen at present when the tar from the natural seeps impact the beaches in the Southern California area.

Manmade structures are listed and discussed in Section IV.A.2. The intensity of the impact on recreation will be related to the type of structure involved. Offshore structures impact recreational boating, and any additional structures from this proposal will increase the present impact in the Santa Barbara Channel and the San Pedro-Long Beach area. These additional impacts are expected to be minor. Pipelines will impact beach use and surf zone areas where they contact the shore. The duration of pipeline installation through the beach zone will be 1 to 10 weeks during which time a section of the beach may be closed. When work is completed, the first high tide will remove all traces of work on the intertidal zone and the first storm will erase marked areas from the upper beach if the pipeline is buried (see pipeline stipulation Section I.B.6.g.). In this case, the beach would have then returned to its original state. However, if there is a necessity to cover the pipeline with riprap through the surf zone, there will be a negative impact on surfing and sightseeing, yet a positive impact for sport diving and fishing. These benefits will result from an aggregation of fish and crustaceans due to the riprap. (A pipeline at Padre Island National Seashore, Texas, closed 1,200 to 1,500 linear feet of shoreline to public use for 2 to 3 weeks, but the burial of the pipeline offshore tended to attract sport fishermen.) Onshore oil and gas related facilities will impact any recreational areas in the immediate vicinity. However, this impact can be minimized by utilizing existing facilities and placing any new facilities in areas of similar development.

Due to the large number of vessels which presently operate in the Sale area the increased vessel traffic will have a minor impact on recreational boating.

Noise will be produced during all stages, but mainly during development and abandonment when construction and teardown are taking place. Low levels of noise will be found during the entire life of the sale area from such sources as helicopters flying to and from the offshore platforms, and the increased number of boats operating in the area. These noises will not be readily apparent as they will be absorbed by the existing noises in the area, and will appear as a slight increase in the total noise spectrum.

The aesthetic disturbances will be the noises previously mentioned, and the change of the skyline by the introduction of structures and other facilities. The aesthetic impact will also be seen where pipelines come ashore, as any riprap covering, if used, will be visually unappealing, and will form an artificial barrier across the beach. Additionally, there will be an earth scar, which will last for a considerable length of time, onshore along the pipeline right-of-way. (For an additional discussion of visual resources, see Sections III.C.10, and IV.C.20, and POCS Technical Paper No. 81-5 (The Granville Corporation, 1981)).

Changes in economic activity are found in the Harris Model as projections over the expected project life in the Sale area. The impact on recreation for the California coastal counties is a general increase in demand, caused by increased leisure time.

Tourism, although ranked as the second largest industry in the Sale area, is in fact the major industry for many of the coastal communities. Avalon, Santa Monica, Venice, Laguna Beach, Newport Beach, Huntington Beach, Oxnard, and Santa Barbara are among the communities which are heavily dependent on tourism. Because much of the tourism is dependent upon water-oriented recreation, an oil spill could have a considerable impact on the industry. In the event of an oil spill impacting the coast, the effect on the tourist industry will depend on the extent of the spill and partly on the news media. If the publicity was "non-dramatic," the cost to the tourist economy would be localized and lessened. However, if the event is dramatically publicized and becomes a highly emotional issue on the national level, it will tend to have a major impact on tourism. This was seen in August of 1979 when the economic impact of the IXTOC I oil spill hit the Texas beach communities approximately two weeks before the major pollution impact. Also, this was noted by the French government in the summer of 1978 after the AMOCO CADIZ spill, where tourists stayed away from the Brittany Coast, including those areas which had not been impacted as well as those which had been cleaned. Representative figures of the impact on the tourist industry of the South Texas Coast are seen in Table IV.C.15.a-1, which gives the change in attendance at Padre Island National Seashore. By using this table it is possible to illustrate the potential economic cost to any of the coastal counties under the "worst case" oil spill. None of the basins are expected to have reserves under pressure which could produce at the force and volume of the IXTOC blowout. (The IXTOC I spill lasted 296 days and spilled an estimated 3.1 million barrels of oil.)

The Santa Barbara oil spill in 1969 was and still is the worst blowout in U.S. waters, and lasted for 10 days, with approximately 5,600 barrels spilled (1973 annual meeting, AAPG). Since that time technology has improved and far stricter safety requirements are in effect. Thus, any spill that might occur in the

TABLE IV.C.15.a-1

CHANGE IN TOURISM AT PADRE ISLAND NATIONAL SEASHORE, TEXAS,
DURING IMPACT OF IXTOC I OIL SPILL

	1978	% Change 78-79	1979	% Change 79-80	1980
January	23,379	+20.9	28,267	+13.6	32,118
February	30,209	+18.0	35,657	-9.7	32,209
March	91,285	-18.1	74,754	-3.2	73,098
April	65,403	+25.7	82,199	+13.7	93,447
May	109,340	-9.7	98,775	+2.0	100,752
June	119,296	-8.9	108,661	-36.3	69,225 (c)
July	131,244	-13.7	113,203 (a)	+12.3	127,089
August	119,068	-25.4	88,843 (b)	-20.3	70,794
September	51,457	-23.8	39,210	+81.6	71,201
October	52,581	-9.8	47,447	+6.4	50,480
November	43,917	-15.6	37,086	-21.2	29,222
December	29,795	-1.4	29,368	-9.5	26,574
Total	866,974	-9.4	783,470	-0.9	776,209

Source: National Park Service, Padre Island National Seashore

(a) Gasoline Shortage July, 1979

(b) Oil Reaches Texas Beaches August, 1979

(c) Hurricane Hit Area June, 1980

Proposed Sale No. 68 area is estimated to last no more than four or five days or leak more than 1,000 barrels/day. The AMOCO CADIZ was $1\frac{1}{2}$ km from shore when it ran aground and it is estimated to have lost 90% of its 1.6 million barrels cargo within the first 11 days of the spill. This amounted to an average of 131,975 barrels per day for the first 11 days and then an average of 18,000 barrels for the remaining nine days. Of this oil, it is estimated that 586,400 barrels actually impacted the shoreline, with approximately 470,000 barrels coming ashore within the first $2\frac{1}{2}$ weeks of the spill, and impacted 72 km of shoreline. This was the result of a super tanker grounding virtually on the beach, and in an area of extremely strong currents and high tidal ranges, which are not found in the Proposed Sale No. 68 area.

Southern California has numerous recreational and tourist areas which are sensitive to potential impact from oil spills. These areas are listed in POCS Technical Paper 81-5 (The Granville Corporation, 1981), and the probability of any of these areas being impacted can be determined from the oil spill model (Section IV.A.1.a.) and POCS Technical Paper No. 81-2 (Cooke, 1981). The impact to the local economies can be approximated by estimating the number of tourists who would stay away from the area. This percentage would be greater for the small communities than for large cities. In Los Angeles, a majority of tourists spend part of their time sightseeing and attending cultural affairs, as opposed to the small communities along the rest of the coast where tourists tend to spend their time relaxing at the beach, fishing or enjoying the local coastal environment. Thus, the small community whose economic base is heavily dependent on beach-oriented tourism could be more severely impacted than the larger towns/cities. The closing of the beaches would increase the reluctance of tourists to go to the area, and due to the publicity that is associated with spills, they would tend to stay away from the impacted area even after it was cleaned.

Avalon, with a year-round population of 2,000, is an example of a small community which is almost entirely dependent on tourism for its economic base. If an oil spill does occur, and if that spill impacts the inner shore of Santa Catalina Island, and closes Avalon Bay, severe economic loss would be felt by the community. This could be in excess of \$4.5 million due to the loss of more than 150,000 tourists in a peak month. Other coastal communities, if impacted by an oil spill, could have losses of similar proportion on those parts of their economies which are tourist oriented. However, most mainland communities have income from more than one basic source, and would therefore be better equipped to take the economic loss.

The large city, however, would probably only have a slight reduction in tourism, as there are numerous other activities which people would substitute. Businesses along the beach would be most seriously impacted economically, but would tend to be more able to survive than their small community counterparts.

In the event that a spill does occur, containment will be initiated as swiftly as possible at the point of the spill, and when combined with the preparations in the local Oil Spill Contingency Plans, the impact on the shoreline could be lessened considerably. There could still, however, be a closure of the beach for a period of time. In the presence of only tar balls, the beach could still be used during cleanup operations, as has been seen along sections of Cape Hatteras National Seashore.

The time involved for cleanup operations depends entirely on the size of spill, the extent of shoreline impacted, the effectiveness of the absorbers and cleanup equipment, the type of shoreline impacted, the accessibility of the impacted area, the speed of the response team and the weather.

Tourism, after a spill, will remain normal for the total Sale area with localized reductions. The exact economic impact cannot be stated as it is entirely dependent on conditions present at the time of the spill and not on conditions at present, and has to include all costs of cleanup, loss to the local economy and compensation to the local businesses.

b. Conclusions: The adverse impact of the proposal on the recreation of the area is expected to be minor unless an oil spill contacts the shoreline. In such case, decline in recreational use would lead to a loss of tourist revenue. The adverse impact could be localized and short term with mild sale-wide economic consequences, but also could become regional in scope and more economically damaging depending on the beach location, size, duration, nature and season of the spill, and publicity associated with a major pollution incident.

c. Cumulative Impacts: The cumulative impacts from existing industrial, residential development, and Proposed Sale No. 68 and previous offshore oil and gas leases in California, are expected to be far greater than the previously listed impacts. The major impact would come from spilled oil, which could affect general beach use and recreational boating in any area of impact. Tourism would be affected by an amount dependent on the volume of oil, the time of year, the area impacted, and the extent of the news coverage. The maximum probability of a spill contacting the shoreline from Proposed Sale No. 68 alone is 10 percent for the east side of Santa Catalina Island, with the largest probability of 5 percent for an impact on the mainland. Note, however, that with all the other potential sources of oil spills this probability rises to 93 percent. Thus, Proposed Sale No. 68 slightly increases the already strong probability that a serious spill could occur.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). Oil spills and oil spill cleanup efforts can affect recreation by damaging marine life, and by interrupting water contact and general beach-use activities. Therefore, the small increase in oil spills noted above would increase slightly: 1) the likelihood that there will be a minor adverse impact on recreation; 2) the likelihood that there could be localized and short term economic consequences and mild sale-wide economic consequences; 3) the possibility that there could be regional or more economically damaging adverse impacts.

The impact on recreation due to the deletion of the tracts in the Channel Island National Marine Sanctuary (Alternative 2) will not change the adverse

impact stated above, except as follows. There will be a slight reduction in the possibility of any spill contacting the islands, and an extension in time before the contact. There is, however, little beach use on the Islands, and any recreation occurring is restricted primarily to the offshore area. There will be a minor lessening of the impact on recreational boating in the area due to the exclusion of the oil industry within 6 miles of the islands. Tourism will be unaffected by the deletion.

The deletion of the area which is adjunct to the Santa Barbara Channel Ecological Preserve (Alternative 3) will not change the adverse impact stated above for Alternative 1 except as follows. There will be a slight reduction in possible conflict with recreational boaters in that development will be excluded from an area, approximately 18 square miles, off the Santa Barbara Coast. The potential impact to the recreational beaches along the Santa Barbara Coast will be significantly reduced, and a reduction will also be noticed for the north side of Santa Cruz Island.

The deletion of the tracts adjacent to Santa Monica Bay (Alternative 4) will have a moderate reduction in the possible impact for the recreationist when compared with Alternative 1. This reduction will mainly be noticed along the shoreline of Santa Monica Bay and at Anacapa and Santa Catalina Islands. The Santa Monica Bay beaches are the most intensely used beaches in California, and any impact which occurs there will be highly visible both from the actual physical contact and from the numbers of people affected. The recreational boating in the area is also intense, with one of the largest marinas on the coast in this section of shoreline. Any possible reduction in impact to this area is highly desirable due to the intense use the resources of Santa Monica Bay receive from both the residents of the area and from tourists.

The deletion of tract 165 (Alternative 5) will slightly reduce the potential impact to recreational boaters, compared to Alternative 1. This is due to the removal of the possibility of offshore structures being placed in the Precautionary Area at the entrance of Los Angeles/Long Beach Harbor.

Cancelling the Sale (Alternative 6) would remove all potential sale-related impacts to recreationists.

Delaying the Sale (Alternative 7) would postpone potential sale-related impacts. It is possible that during such a delay, safety and clean-up equipment would be improved.

16. Oil and Gas Infrastructure

a. Refineries

i. Alternative 1: It is assumed that the refineries in Los Angeles (LA) basin have the capability and would process all of the produced Sale No. 68 crude oil (I.B.1.c). Also, it is assumed that the crude oil would back out an equal amount of either foreign, or Alaskan crude oil. Unless the Proposed Sale No. 68 crude oil is beyond the refineries' limiting factors, for example, sulfur content, there should be no impact on the refineries. With relatively sour (high sulfur) and heavy (low API) proposed crude, the refineries may be required to make expensive modifications to refining processes.

If the oil companies decide to transport Proposed Sale No. 68 crude by tankers to other refineries than those that are located in the Los Angeles Basin, the expected number of oil spills will be slightly higher.

ii. Conclusions: Based on the assumption that the Proposed Sale No. 68 crude would be processed in the Los Angeles Basin refineries without refinery modification, there should be no impact on the refineries.

iii. Cumulative Impacts: It is assumed that the cumulative projects would not require a modification to the refineries. Also, it is assumed that the Proposed Sale No. 68 crude would back out an equal amount of either foreign or Alaskan crude. Consequently, the cumulative projects would have no impacts on the refineries.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional adverse impacts to refineries are anticipated because none of the stipulations bear any relationship to refineries.

Alternatives 2 through 7 would have no impacts on the refineries.

b. Offshore Structures

i. Alternative 1: Two categories of activities associated with the proposal may affect existing offshore structures. Additional crew and supply boats will be traversing the offshore area. This increased boat traffic will be needed to meet the requirements of the additional activities. Seismic boats will also be operating in the area. During periods of adverse weather conditions, there will be an increased risk of collision with existing structures. Such incidents may result in oil spills, loss of human lives, and loss of equipment. Barging from the Outer Banks (and, in Transportation Scenario No. 2 (Yamasaki, 1981), from the Channel and Inner Banks) will increase the risk to permanent structures on existing leases offshore San Pedro Bay.

Secondly, existing platforms may be disturbed by Proposed Sale No. 68 activity nearby, such as platform and pipeline construction. Adverse weather conditions may cause equipment used in developing the Proposed Sale No. 68 leases to

drift into existing platforms; thus causing injury, loss of property, loss of life, and oil spills. Impacts to existing offshore structures by Proposed Sale No. 68 development activity is not considered significant. This is due to the fact that operations may be suspended during adverse weather conditions. Conflicts with existing structures are, in part, dependent upon the locations of the Proposed Sale No. 68 activity. If the new platforms are located at a distance from existing structures, the potential conflict is less than if development occurs in an area with existing development.

ii. Conclusion: Impacts to existing offshore structures by Proposed Sale No. 68 development activity is not considered significant.

iii. Cumulative Impacts: The probability of accidents between Proposed Sale No. 68 exploration and service activity and existing, proposed and anticipated offshore structures is low.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If the Geological Stipulation is not adopted, there is a slight possibility that an unidentified geohazard could disrupt an offshore structure. However, existing regulations are expected to adequately mitigate any potential impacts from geohazards. If Military Stipulation No. 1 is not adopted, coordination between oil and gas activities and military activities (e.g., missile firings, air to surface gunnery, mine sweeping, mine hunting and underwater detonations) would be more difficult. This could result in a slightly higher chance of accidents. If the Transportation of Hydrocarbon Products Stipulation is not adopted, no additional adverse impacts to offshore structures are anticipated since the increase in vessel traffic would be minor. If the Wells and Pipeline Stipulation is not adopted, there is a slight possibility that fishing nets could catch on and damage a temporarily abandoned subsea wellhead.

Adoption of Alternatives 2 through 5 would not alter the potential impacts discussed above for Alternative 1.

Alternative 6 would avoid all potential impacts discussed above for Alternative 1.

Alternative 7 would delay all potential impacts discussed above for Alternative 1.

c. Pipeline Systems

i. Alternative 1: Existing offshore pipeline systems may be adversely impacted by the following exploration and development activities that are expected to be associated with Proposed Sale No. 68: anchoring of exploration vessels, pipeline lay barges, and boats associated with platform placement; platform placement itself; and the smoothing of mud mounds by dragging chains or bars along the ocean bottom. Offshore pipelines may be physically damaged by these activities. Adverse impacts to existing offshore pipeline from the development of Proposed Sale No. 68 hydrocarbons are considered to be slight. This is due, in part,

to the fact that few pipelines currently exist in the area. Severe accidents occurring from pipeline breakage by development of Alternative 1 are thought to be unlikely due to the safety equipment/valves that regulate the flow of hydrocarbons through the systems.

Existing onshore pipelines would be used to transport the Proposed Sale No. 68 oil and gas from the producing fields to refineries and to existing gas transmission pipelines. To transport these fluids, additional pumping and compressor power would be needed resulting in a slight increase in air pollution. Also, the Proposed Sale No. 68 fluids could contribute slightly to the number of pipeline failures. This would result in a slight increase in the number of onshore oil spills. Additionally, there could be slight increase in manpower and equipment to handle the Proposed Sale No. 68 oil and gas.

ii. Conclusions: Adverse impacts to existing offshore and onshore pipelines from the development of Proposed Sale No. 68 hydrocarbons are considered to be slight.

iii. Cumulative Impacts: Due to the increased oil and gas development activities within the Southern California Bight, the probability of adverse impacts to offshore and onshore pipeline systems would moderately increase. This increase would result in moderate adverse impacts to pipeline systems.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If the Geological Stipulation is not adopted, there is a slight possibility that an unidentified geohazard could disrupt a pipeline. However, existing regulations are expected to adequately mitigate any potential impacts from geohazards. If Military Stipulation No. 1 is not adopted, coordination between oil and gas activities (e.g., missile firings, air to surface gunnery, mine sweeping, mine hunting, and underwater detonations would be more difficult. This could result in a slightly higher chance of accidents. If the Transportation of Hydrocarbon Products Stipulation is not adopted, no additional adverse impacts to pipelines are anticipated since this stipulation only requires pipelines to be used if feasible and environmentally preferable. If the Wells and Pipeline Stipulation is not adopted, there is a slight possibility that fishing nets could catch on and damage a pipeline.

Selection of Alternatives 2 through 5 would result in adverse impacts that are similar to the ones discussed above for Alternative 1.

Cancelling (Alternative 6) or Delaying the Sale (Alternative 7) would eliminate or postpone, respectively, the sale-related adverse impacts.

d. Onshore Facilities

i. Alternative 1: Transportation Scenario No. 1 (Yamasaki, 1981) indicates that Proposed Sale No. 68 produced oil is processed on the offshore platforms. The produced gas is reinjected into the wells in the

Outer Bank Area, processed in the offshore platforms in the Inner Bank Area, and processed onshore in existing processing facilities within the Santa Barbara Channel area. No adverse impacts to existing onshore processing facilities are anticipated.

ii. Conclusion: No adverse impacts to existing onshore processing facilities are anticipated.

iii. Cumulative Impacts: No significant adverse impacts to onshore facilities is expected from cumulative projects.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional adverse impacts to onshore facilities are anticipated because none of the stipulations bear any relationship to onshore facilities.

Alternatives 2 through 5 are not expected to adversely impact onshore processing facilities.

If Alternatives 6 (Cancel the Sale) or 7 (Delay the Sale) are adopted, no adverse impacts on onshore facilities would be expected.

17. Transportation Systems

a. Ports and Shipping

i. Alternative 1: Impacts on ports from the proposal could be from increased employment and possible oil spills impacting the ports. Increased employment at the ports could be considered as part of the secondary employments which will be described below. If an oil spill impacted a port, deployment of containment booms or other oil spill equipment could delay the entry or departure of vessels from the port. Analysis of the oil spill model (Cooke, 1981), using Transportation Scenarios Nos. 1 and 2, indicate that the probabilities of one or more oil spills greater than either 1,000 or 10,000 barrels contacting a port within 30 days is less than 6 percent. Ports investigated for oil spill impact are: Port Hueneme, Los Angeles-Long Beach, and San Diego. The probability of an oil spill hit at Santa Barbara harbor is even less than 6 percent.

Impact on shipping from the proposal could be from increased shipping and increased employment of crew members. The impact is based on the production year of 1990 for Scenario No. 1 (Yamasaki, 1981). Increased shipping could result in increased commerce and vessel accidents. Increased employment could result in increased wages which would be beneficial to local business.

Proposed Sale No. 68 barging traffic is about 2.7 percent of the estimated tanker traffic to the Ports of Los Angeles and Long Beach (LA-LB) at 1990. The Proposed Sale No. 68 barging traffic, which is described below, is equal to the total number of barge trips to the Ports of LA-LB in 1990. The estimated commercial tanker traffic, which is described below, is the estimated total traffic projected from the referenced estimates indicated below. In 1990, Proposed Sale No. 68 crude oil would be transported as follows: 1) A 20,000 bbl barge would make approximately 38 trips per year from the area south of Santa Rosa Island to LA-LB ports; 2) A 30,000 bbl barge would make approximately 107 trips via Dall Banks and San Nicolas to LA-LB ports; 3) A 30,000 bbl barge would make approximately 119 trips per year from S.E. Tanner Bank/Santo Tomas Knoll area to LA-LB ports. The total 1990 commercial vessel traffic entering the ports of LA-LB could be 9855 (calculated from information in Reese-Chambers, 1980).

Increased shipping would result in increased direct employment which would increase the secondary employment by an estimated ratio of 3 to 4½ times the direct employment (USDI, 1980, Section IV.B.8). The direct employment includes crew members estimated for the proposed barges, crew, and supply boats. Barge transportation routes were described above. Crew and supply boats transportation routes are indicated in Section IV.A.2.a.

The above transportation would generate 85 direct labor jobs at the 1990 operation level which could add approximately 1.9 million dollars (1979 dollars) to the local economy in wages. The direct labor wage is based on \$1,870 per month. The 85 direct jobs would generate approximately 319 secondary labor jobs at the 1990 operation level. This secondary labor would add approximately 7.5 million dollars.

Impacts on navigation during exploration, development, and production could be from vessel traffic using traffic lanes crossing the proposed tracts and from vessel accidents (USDI, 1979, Section III.A.3). Restriction of exploration and development activities in the traffic lanes could increase the cost of exploration and development of the proposed tracts. Vessel accidents are based on Transportation Scenario No. 1 (Yamasaki, 1981) at the peak production year of 1990. These accidents could result in loss of human lives, personal injuries, property damages, and oil spills.

The Proposed Access Route (PAR) from Point Conception to the California-Mexican Border is described in Section III.C.7.a and illustrated in the Transportation Visual. The PAR could partially or completely cross approximately 62 proposed tracts.

In comparison of cost between tracts with and without traffic lanes, the cost of exploration and development of tracts with traffic lanes could be substantially higher (USDI, 1980, Section IV.B.8). The higher cost could be mostly during development where two fixed platforms, one on each side of the traffic lane, might be needed instead of one. Development of shallow petroleum structures may prohibit the use of fixed platforms and a subsea completion system may be needed to develop those structures.

Estimates on accidents of any sort, that are caused by vessel traffic, are based on an equation of a constant x vessel accidents per ship movement (McMullen, 1977). Constant for total casualties is 8×10^{-5} ; for severe casualties, 2×10^{-5} . Total casualties could range from dents and scraps to total loss of a vessel. The second assumption is that the ship movement for the proposed sale is the number of round trips made by the proposed barges. Vessel accidents could be caused by vessels crossing the traffic lanes, vessels not adhering to the traffic lanes, vessels ramming into offshore structures, and vessels running aground (USDI, 1980, Section IV.B.8). Offshore platforms could provide a benefit for navigation with lighting, distinct marking and color, fog horn, radar, and other navigational aids (FEIS Sale No. 53, IV.B.8).

McMullen (1977) has indicated that the introduction of the vessel traffic lanes (Traffic Separation Scheme) in the Santa Barbara Channel in 1969 had represented a major change in the Channel vessel traffic procedures. During the 8-year period of established traffic lanes, there were no collisions or casualties in the Santa Barbara Channel.

The Eleventh District Coast Guard has proposed a PAR between Point Conception and the California-Mexico Border as described in Section III.C.7.a. Without any established sea lanes, the above-described vessel accidents could be much higher. In addition, the Eleventh District Coast Guard (Terveen, 1981) is recommending the following mitigating measures for platforms/ structures located within 2 nautical miles of designated traffic lanes: Paint platforms/ structures white and/or yellow to enhance their visibility in haze and fog; require this coating to be maintained during the existence of the platform; require reliable automatic emergency sources of power for platform's aids to navigation and vital control systems with a capacity for at least 48 hours of operation (NOTE: Some platforms are unmanned or manned part-time, and receive electrical power by cable which may or may not be buried); and consider radar reflection enhancement measures on small platforms.

In the event that the proposed Port Access Route (PAR) recommendations (Section III.C.7.a) are not adopted, then current U.S. Coast Guard policy concerning hydrocarbon activities in shipping areas would continue to be upheld. Impacts on ports and shipping under current USCG policy would be the same as impacts that were previously described above. It is current USCG policy not to permit temporary or permanent hydrocarbon-related structures within vessel traffic lanes or precautionary area. The existing vessel Traffic Separation Scheme (TSS) and Precautionary Area is shown in Figure II.B.5-1 and the large color visual.

In the event that temporary and/or permanent structures are permitted within TSS or Precautionary Area, impacts on shipping would be high; impacts on ports would be the same as previously described. Approximately 61 tracts partially or totally cross the existing TSS.

Vessel accidents possibly would increase as the numbers of temporary and/or permanent hydrocarbon structures within the TSS increase. Each vessel accident would range from dents and scrapes to the total loss of a vessel or structure.

In the case of a total loss of a vessel or structure, a large oil spill, high economic loss and loss of lives could occur with increasing vessel accidents occurring within and near the TSS, it is likely that the shipping industry would use alternate routes. The most likely alternate route for ships going from Point Conception to the Ports of Los Angeles/Long Beach would be south of the Channel Islands. This alternate route would increase the travel distance from Point Conception to the Ports of Los Angeles/Long Beach by about 35 percent. Furthermore, the alternate route traverses a military target area. The alternate route also would not have the benefit of the safe vessel-routing of a TSS.

ii. Conclusions: The proposal could generate some increased direct employment to shipping, and some increased secondary employment to the ports. While the increase in employment is relatively small when compared to total employment in the regional economy, for certain sectors, locales, and businesses, it could be significant. The impact of a major oil spill could require a temporary rerouting of the ship traffic and could delay the entry or departure of ships from the ports. Demand for port facilities from the oil and gas industry and other users would probably result in increased use of limited space and port resources. Increased user charges and/or expansion of port facilities would likely result. The extent of these changes would largely be determined by local planning agencies.

Under current Coast Guard policy and the proposed PAR recommendations, the estimated numbers of vessel accidents during exploration, development, and production activities of the proposed sale should be small. Traffic lanes crossing the proposed tracts could increase the cost of exploration and development substantially.

In the event hydrocarbon operations are permitted within the TSS, impacts on shipping would be: high economic losses to the shipping and oil industries, loss of lives, and increased probability of a large oil spill.

iii. Cumulative Impacts: For the cumulative impacts on transportation, the following projects were considered for economics and navigation: Existing Federal and State oil and gas leases offshore California, existing shipping, and Proposed Sale No. 68. To compare transportation between the cumulative projects and the proposal, an analysis was made based on the year 1990. It is estimated that the increase in cumulative shipping to Los Angeles-Long Beach Ports could be approximately 9 percent as compared to 2.6 percent (IV.C.17.a.1) for the proposal. The 9 percent increase could cause an increase in the expected number of vessel accidents from 0.011 to 0.036. Increased cumulative shipping contributed by the existing Federal and State lease is about 2.4 times that of Proposed Sale No. 68.

The above analysis is based on the adoption of the USCG's PAR recommendations. Current USCG policy does not permit temporary or permanent structures within traffic lanes or precautionary areas. Thus, under current USCG policy, the cumulative impacts on ports and shipping would be the same as described above.

In the event that hydrocarbon operations are permitted within the vessel Transportation Separation Scheme and Precautionary Area, the cumulative impacts

on ports would be the same as described above, except that there would be a greater number of oil spills that would impact the ports. The increased numbers of oil spills would occur as a result of an increase in the numbers of accidents between vessels and/or between vessels and structures. The total numbers of vessels using the TSS would be about the same as described above.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1 is not adopted, coordination between oil and gas activities and military activities (e.g., missile firings, air to surface gunnery, mine sweeping, mine hunting and underwater detonations) would be more difficult. This could result in a slightly higher chance of accidents. If the Transportation of Hydrocarbon Products Stipulation is not adopted, no additional adverse impacts to shipping are anticipated since the increase in vessel traffic would be minor.

Alternative 2 (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) would decrease oil and gas shipping activities slightly below the proposal level. This decrease in transportation would result in reduction of approximately 10 direct labor jobs at the 1990 operation level which could reduce approximately 0.23 million dollars (1979 dollars) from the local economy in wages. The direct labor wage is based on 1,870 dollars per month. Reduction in direct labor jobs of 10 would reduce approximately 38 secondary labor jobs at the 1990 operation level. This reduction in secondary labor would reduce approximately 0.86 million dollars from the local economy.

Decrease in transportation could also decrease vessel accidents from 0.011 to about 0.010. The time required for oil spills to impact the ports by Alternative 2, as compared to Alternative 1, would be increased (IV.A.1.a).

In the event that hydrocarbon operations are permitted within the traffic lanes and precautionary area, the impacts on ports and shipping would be slightly reduced below the levels described above for Alternative 1 where temporary and permanent structures occurred within the traffic lanes and precautionary area. This alternative would delete approximately 13 percent of the proposed tracts within the existing traffic lanes.

Alternative 3 (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) would decrease oil and gas shipping activities slightly below the proposal level. This decrease in transportation would result in reduction of approximately 4 direct labor jobs at the 1990 operation level which could reduce approximately 0.8 million dollars (1979 dollars) from the local economy in wages. The direct labor wage is based on 1,870 dollars per month. Reduction in direct labor jobs of 4 would reduce approximately 14 secondary labor jobs at the 1990 operation level. This reduction in secondary labor would reduce approximately 0.31 million dollars from the local economy.

Decrease in transportation (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) could slightly decrease vessel accidents. The probability of an oil spill impacting a port within 30 days is small (IV.A.1.a).

In the event that hydrocarbon operations are permitted within the traffic lanes and precautionary area, the impacts on ports and shipping would be the same as those described under Alternative 1. Tracts that would be deleted, if Alternative 3 were selected do not overlies the Traffic Separation Scheme.

Alternative 4 (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) would decrease oil and gas shipping activities slightly below the proposal level. This decrease in transportation would result in reduction of approximately 7 direct labor jobs at the 1990 operation level which could reduce approximately 0.17 million dollars (1979 dollars) from the local economy in wages. The direct labor wage is based on 1,870 dollars per month. Reduction in direct labor jobs of 7 would reduce approximately 28 secondary labor jobs at the 1990 operation level. This reduction in secondary labor would reduce approximately 0.64 million dollars from the local economy.

Decrease in transportation (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) could also decrease vessel accidents from 0.011 to about 0.010. Probability of an oil spill impacting a port within 30 days is small (IV.A.1.a).

In the event that hydrocarbon operations are permitted within the traffic lanes and precautionary area, the impacts on ports and shipping would be moderately reduced from that described above for Alternative 1 where temporary and permanent structures occurred within the traffic lanes and precautionary area.

Alternative 5 (assuming either adoption of the USCG's proposed PAR recommendations or current USCG policy) would decrease slightly vessel accidents and the probability of an oil spill impacting a port within 30 days.

In the event that hydrocarbon operations are permitted within the traffic lanes and precautionary area, the impacts, when compared to the entire lease sale area, would be the same as described for Alternative 1 where temporary and permanent structures occurred within the precautionary area and traffic lanes.

Alternative 6 (Cancelling) or Alternative 7, (Delaying the Sale) would eliminate or postpone sale-related adverse impacts.

b. Additional Transportation Systems

i. Alternative 1: Impacts on other transportation systems from the proposal would probably be slight on the highways, railroads, and airports. Slight impacts on highways and railroads would be from increased traffic movements of oil- and gas-related equipment, supplies, and manpower to support exploration, development, and production. Traffic should increase during development and decrease during production. Increased traffic could occur at the Proposed Gaviota Supply Base, Carpinteria, Port Heuneme, Port of Los Angeles, and Port of Long Beach.

Slight impacts in airport facilities could be from operation of helicopters to transport men and light equipment from the airports to the oil and gas operation sites. Helicopters could operate from the following airports: Santa Barbara Municipal, Oxnard, Los Angeles International, Long Beach Municipal, John Wayne (Orange County), and San Diego International.

ii. Conclusions: The proposal could cause slight impacts to traffic movements on highways, railroads, and airports.

iii. Cumulative Impacts: Impacts on highways, railroads, and airports from cumulative projects (Cooke, 1981) would be moderate.

iv. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional adverse impacts to traffic movements on highways, railroads, and airports are anticipated because none of the stipulations bear any relationship to these transportation systems.

Alternatives 2, 3, 4 and 5 would slightly decrease the impacts to highways, railroads, and airports described under Alternative 1.

Alternative 6 (Cancelling) or Alternative 7 (Delaying the Sale) would eliminate or postpone sale-related adverse impacts.

18. Military Uses: The Department of Defense (DOD) conducts operations within the Southern California Bight and potential conflicts with OCS activities exist as discussed in Section III.C.8.

a. Alternative 1: If the Sale proceeds as proposed, military operation areas could be impacted. Meetings with DOD representatives resulted in the elimination of a number of tracts that were originally being considered for leasing. Of the remaining tracts, DOD indicates that tracts 164, 167, and 169 would interfere with operation of the Long Beach Naval Shipyard Electronic System Evaluation Facility (SESEF); tracts 56, 59, 105-107, 111-114, 118-121, 125-127, 133-135, 142-144, and 195-197 would interfere with operation of the Pacific Missile Range; and tracts 189-194, 203, 204, 206, 207, 209, and 210-221 would interfere with operation of the San Clemente Island Test Range. Detailed impacts and the effects of potential mitigation measures will be determined in joint DOD/BLM meetings prior to final tract selection.

b. Conclusions: Negotiations that will result in conditions allowing joint usage, potential mitigation measures, or tract deletion from the Sale are continuing between BLM and DOD and the results are not yet known.

c. Cumulative Impacts: DOD uses most of the Southern California Bight for one purpose or another with schedules and types of usage depending on a number of factors. The cumulative impacts on military activities from oil and gas activities and other projects in the area are not expected to be significant since the military actively coordinates with other uses.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1 is not adopted, coordination between oil and gas activities (e.g. missile firings, air to surface gunnery, mine sweeping, mine hunting and underwater detonations) would be more difficult. This could result in a slightly higher chance of accidents. If Military Stipulation No. 2 is not adopted, no additional adverse impacts are anticipated, because this stipulation refers only to indemnifying and holding harmless the United States.

Alternative 2 would delete 13 complete tracts and 24 partial tracts from the Channel Islands National Marine Sanctuary. Alternative 2 would delete 4 tracts (50, 51, 55 and 116) from DOD concerns.

Alternative 3 would delete 3 complete plus 5 partial tracts from the Santa Barbara Channel Ecological Preserve. Alternative 3 would delete all above 8 tracts (62-67, 71 and 72) from DOD concerns.

Alternative 4 would delete 12 tracts from the Santa Monica basin. Alternative 4 would delete all above 12 tracts (122, 123, 128, 129, 136-138, 145-147, 151, and 155) from DOD concerns.

Alternative 5 would delete one tract from the San Pedro area. Alternative 5 would delete tract No. 165 from DOD concern.

Alternative 6 (Cancel) or Alternative 7 (Delay) would eliminate or postpone sale-related adverse impacts.

19. Cultural Resources

a. Alternative 1

Cultural resources are nonrenewable, and are at some risk from the leasing proposal. An analysis of the impacts to cultural resources follows below.

Marine Archaeological Resources. The potential for damage or destruction of marine archaeological resources will begin during exploratory drilling. Drilling and anchoring impact an area up to 12 times the water depth, and, thus, are able to damage or destroy shipwrecks and/or aboriginal sites over a broad area. The risk to aboriginal sites is limited to waters ≤ 150 m deep. Because shipwrecks occur at all depths, there is the possibility of impacting a historic wreck on any tract. Those tracts with the greatest potential for risk to cultural resources have been identified in Section I.B.6.b. The data gathered as a result of invoking the cultural resource stipulation and data gathered as a result of various OCS Orders (refer to Section I.B.5) and from other noncultural related data gathering efforts (refer to Section I.B.7) will assist in the identification and protection of submerged cultural resources. There remains a possibility that mitigative efforts will not protect all of the resources at risk.

Another, indirect, form of impact results from the typically large amount of debris that remains on the seafloor many years after production ends. Debris may include those tools and supplies lost overboard; it may also include illegally jettisoned waste or surplus supplies (e.g., pipe, cable) and result in magnetic anomalies and side scan sonar images that will interfere with remote sensing analysis. This has been a continuous problem in areas previously leased. Another hazard to surveys may be caused by the operation of motors, winches, pumps, and various other equipment on drillships and platforms. This creates "noise" on the records of remote sensing surveys undertaken in nearby areas. These types of interference with surveys will likely result in some resources not being appropriately identified, and could result in loss of or damage to some of the resources.

A source of potential impact is the divers, who are employed by the industry to explore for hazards, maintain equipment, or recover lost equipment. Divers may discover and collect previously undetected artifacts, or they may disclose the location of submerged artifacts to others who might salvage or plunder the site. Losses of this type have been reported previously in the Sale area, and some limited impacts to cultural resources should be expected.

There is a relatively low risk to marine archaeological resources from oil spill which would most likely cause contamination that would alter the appearance of artifacts or interfere with radiocarbon dating. However, significant resource impacts are not expected.

Terrestrial Archaeological Resources. Terrestrial development related to offshore oil and gas is a potential source of impact to terrestrial archaeological sites. Many historic and prehistoric sites along the coast in the Sale area are known and have been recorded. It is likely archaeological surveys will be conducted in any area of onshore development. However, it is possible some sites will be missed by a surficial survey; these undiscovered sites would be at risk. This risk is considered to be low.

When an archaeological site must be excavated because no other mitigatory option exists, values to future investigators may be permanently lost. Unavoidable damage to historical or prehistorical values will occur when sites are not identified in time for preservation.

Oil spills are not expected to produce direct impacts to terrestrial archaeological resources. However, indirect impacts to these sites are possible if heavy equipment is brought into beach areas for cleanup activities. Picking up sorbents or sand with equipment may damage sites, although those exposed to swells or waves may already be reworked in the shallowest layers. The crisis atmosphere immediately following a spill could preclude adequate survey or site marking. The impact to terrestrial sites from oil spill cleanup activities is expected to be low to moderate, and will be dependent upon the extent of the spill, the number of spills, and the area of activities.

Although several historically important lighthouses occur along the shoreline of the Sale area, it is not expected that visual or auditory intrusion will constitute a significant impact to these structures; i.e. additional industrialization would not affect the intrinsic historical value of these structures.

Land use change and resultant development is a potential impact on cultural resources. The degree of such impact will be dependent on the amount and especially the location of onshore development. There is a low probability of terrestrial resources being adversely affected in this way.

Contemporary Ethnic Groups. In the Santa Barbara Channel area, there is a moderate risk from oil spills to foodstuffs traditionally gathered by Native Americans. These foods, primarily found in the intertidal zone, include seaweed, abalone, mussels, sea anenomes, periwinkles, and various fish. Gathering is conducted locally both for ceremonial and subsistence uses.

Although not scientifically studied yet, it is known that extensive intertidal subsistence and recreational gathering of foodstuffs occurs through most of the Bight. Although much of this gathering is illegal, for some families the intertidal zone is a major source of protein. Thus, an oil spill in any part of the Bight presents a potential impact to gathering activities. The risk is moderate to high.

Visual and auditory intrusion is of concern because there are several locales of spiritual importance to Native Americans. This type of impact has been a problem from previous industrial development. In addition, any oil spill and associated cleanup activities in proximity to areas of spiritual concern to Native Americans would be considered by them to be spiritually intrusive. This type of intrusion is thought to be limited to the Santa Barbara Channel area. Point Conception, which has been nominated to the National Register of Historic Places, is particularly vulnerable to additional impact because of its great importance as a sacred site in Native American religion, and because it has previously been subjected to impact from industrial development. Since not all of the areas sacred to Native Americans are recorded, it is not possible to completely assess the potential impact of offshore oil and gas development

on this type of resource. However, the only tract in Proposed Sale No. 68 with a predictable potential for impact on Point Conception is Tract No. 009.

b. Conclusions: This proposal will commit some areas of relatively shallow waters of the OCS to a permanently disturbed condition that will complicate or even preclude search for antiquities and modern objects (ships, aircraft, equipment) alike. Some anomalies will have to be investigated which are of no cultural value, but which may emulate the signature of cultural resources. It is nearly certain there will be some loss of historic and prehistoric archaeological sites on the OCS. There may be some loss of marine archaeological sites in State waters from pipelaying activities.

Physical disruption will occur if construction or oil spill cleanup activities take place on undetected or ignored terrestrial archaeological sites. State protective requirements probably would be mitigatory in most cases and, thus, the level of impact for terrestrial archaeological sites is expected to be low.

Mitigation of possible impact on a site or object by salvage efforts constitutes an irreversible and irretrievable loss of some of the information since sites left undisturbed until more advanced technology and methodology is available will yield greater data rewards.

Gathering activities by contemporary ethnic groups could be decreased as a result of oil spill(s). Such impacts are expected to be temporary, but the indirect effects on the individuals and groups engaged in such activities could be long term.

Depending on the location of industrial activities resulting from this proposal, the adverse effects on areas sacred to Native Americans is expected to be low to moderate.

c. Cumulative Impacts: Cumulative effects are expected to be most severe in the Santa Barbara Channel region, where oil and gas exploration and development has occurred with relatively high intensity. The more intense and extensive the industrial activities, the greater the effect on cultural resources. The greatest cumulative effect on a terrestrial resource is predicted for Point Conception, which is important to contemporary Native Americans for cultural and spiritual reasons. Point Conception has been previously impacted by both terrestrial and marine development. The net effect of additional OCS impacts on cultural resources will, in part, be dependent upon the application of mitigative efforts. If the lease stipulation is invoked for the Proposed Sale No. 68 recommended tracts, then cumulative impacts should lessen. Some positive effects could result from a general increase in the knowledge of cultural resources because of survey work conducted in conjunction with exploration and development.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. However, the stipulations presented in Section I.B.6 are subject to approval by the Secretary of the Interior. If Military Stipulation No. 1, the Geological Stipulation, and the Transportation of Hydrocarbon Products

Stipulation are not adopted, there could be a small increase in the potential for oil spills and a small increase in the number of oil spills expected to result from the Sale (see explanation in Section IV.C.1.d). These oil spills would increase slightly the likelihood of oil reaching shore, thereby increasing the likelihood of onshore cleanup efforts in the vicinity of terrestrial cultural resources. This increased likelihood of cleanup efforts could increase slightly adverse impacts to terrestrial archaeological sites since, during the crisis atmosphere of a cleanup effort, there is not adequate time available to locate and properly mark the location of these sites. Additionally, if the Cultural Resource Stipulation is not adopted, there could be a slight increase in potential adverse impacts to prehistoric and historic submerged cultural resources due to lack of identification surveys prior to oil and gas activities. These identification surveys allow examination or avoidance of cultural resources. Without these surveys, oil and gas activities are more likely to unknowingly disturb cultural resources, and the construction activities could create new anomalies that would interfere with future surveys for cultural resources.

If Alternatives 2 or 3 are adopted, the impacts described under Alternative 1 would be decreased by removing portions of tracts that have a higher potential for submerged prehistoric sites, i.e., portions of tracts in water depths ≤ 150 m. Impacts to submerged historic sites, i.e., shipwrecks, could be the same as in Alternative 1, as their predictability of occurrence is subject to uncontrolled factors, e.g., drift, navigational error, reporting error, etc., and the inadequacy of written records. There would be a lessening of impacts to historic resources if any are located on or adjacent to the tracts.

Alternative 4 would not significantly change the impacts to prehistoric resources as all of the tracts are located in deep water > 750 m. A reduction in impacts would occur from a reduced number of required offshore to onshore pipelines to transport commercial discovery amounts of oil and gas. Impacts to historic resources may change as under Alternatives 2 and 3.

Deletion of Tract 165, Alternative 5, may lessen impacts to prehistoric resources, the tract is located in water depths ≤ 150 m. Impacts to historic resources may also lessen, as the tract is located outside a harbor historically significant to the development of California. This extensive historic use may have disturbed prehistoric resources, ships dragging at anchor may have disturbed the bottom surface to a depth of several feet.

Cancellation of Proposed Sale No. 68, Alternative 6, would extend the preservation of most of the cultural resources subject to impact from the proposal.

A delay of the Sale, Alternative 7, would result in a delay, but not an elimination, of any adverse effects on cultural resources. There is a remote possibility a delay would allow additional knowledge to be gained by research so that mitigation methods might be improved.

20. Visual Resources

a. Alternative 1: Social, economic, cultural and philosophic backgrounds greatly vary one's perception of esthetic values. The sight of an offshore drilling platform may significantly decrease one observer's enjoyment of the coast, while another would be unaffected. Using a landscape-architectural viewpoint, the potential impacts on visual resources from OCS development have been identified.

Offshore oil and gas development and related onshore support facilities will have an adverse impact on visual resources, the degree depending upon the nature and number of the facilities and their location. Visual resource degradation could decrease recreational enjoyment of the beaches and coastal waters for some people.

Offshore platforms will cause the longest lasting, most prominent visual impact and are the most difficult to mitigate. The platforms are fairly prominent objects exhibiting discordant vertical and angular lines against the soft horizontal plane of the sea (see Figure IV.C.20-1). Portions of a 190-foot platform structure may be seen from the water's edge if it is located within 17 miles of the shoreline. From elevated vantage points, the visual range increases in proportion to elevation. At distances beyond about 15 miles, the size of platforms would appear very small and may be obscured by natural sea haze from 40 to 60 percent of the time. Dense fog and haze may obscure platforms situated at the 3-mile limit up to approximately 22 percent of the time, depending upon local climatic features (Naval Weather Service, 1976). For additional information on OCS structures see Section IV.A.2.

The impact of offshore structures is expected to be minor for most of the coast; however, moderate visual impacts could occur with development off Santa Monica Bay or off the Irvine Coast.

Onshore visual impacts during exploration could entail land use changes for equipment storage, heliports, communication and navigation equipment facilities, increased vehicular traffic and construction activities. During the development stage, onshore storage and processing facilities, pipeline installation, pipeline and barge fabrication and equipment storage yards will all involve some deterioration of the visual resource onshore. Sensitive design, siting, choice of materials and landscaping could reduce the visual impact of these installations. Despite these potential mitigations, there is a possibility of some visual resource deterioration, particularly in undeveloped areas.

A significant visual impact could occur onshore in the event of a major oil spill. Accidental spills could occur as a result of vessel loss, production equipment failure, pipeline ruptures or well blowouts. Some low-level spillage will occur during the course of normal operations. The duration of oil fouling on the beaches ranges from a few days to years, depending upon the type and amount of spillage, extent of cleanup efforts, beach sand transport mechanisms, oil composition, etc. Any oil fouling of beaches would have an adverse effect on visual quality until the oil is removed by either cleanup efforts or natural processes.



3 Miles from Platform



5 Miles from Platform



10 Miles from Platform

Figure IV.C.20-1 Visual Impact of Oil Platforms

An effort to quantify the impacts of various OCS-related structures on the aesthetics of the Sale No. 68 area can be found in POCS Technical Paper No. 81-5. (The Granville Corporation, 1981).

b. Conclusions: It is believed that Proposed Sale No. 68-related development would cause visual degradation in those areas where development occurs. The amount of this degradation will vary with the location and type of OCS-related facility and the nature of the shoreline area.

c. Cumulative Impacts: Cumulative impacts to the visual resources would come from three main sources: spilled oil, offshore platforms or onshore facilities. Spilled oil could appear in the area from such sources as tankers, existing platforms and pipelines, sewage discharges, and natural seeps. Of these, the most important are sewage discharge and natural seeps, which together discharge over 1,700 barrels of oil into the Southern California Bight every day. This oil can appear on the beaches in the form of tar balls and oil sheens and as such, detracts from the beauty of the beach. There are at present 9 platforms and 7 artificial islands in State waters and 11 platforms and one OS&T in Federal waters off Southern California, and these have to be included in the aesthetics of the region in regard to future development. Onshore facilities are expected to remain at about present levels as there are already facilities in the area to handle Proposed Sale No. 68 requirements. These potential impacts have already been incorporated into the analysis as is seen in POCS Technical Paper No. 81-5 (The Granville Corporation, 1981), except the impact of the spilled oil, which could have a large impact if it becomes a major spill.

d. Other Alternatives: The analysis presented above assumes that all mitigating actions discussed in Sections I.B.5, I.B.6, and I.B.7 are in place. If the Secretary of the Interior does not approve the stipulations presented in Section I.B.6, no additional adverse impacts to visual resources are anticipated because none of the stipulations bear any relationship to visual resources.

The reduction in potential impact due to the deletion of the tracts in the Channel Island National Marine Sanctuary (Alternative 2) would be mainly restricted to the view from the Channel Islands and the Ventura County mainland. This is due to the tracts in question being within 6 miles of the Islands. The mainland viewshed would retain the impact of the total Sale, as any potential platforms which would be removed by the deletion, are beyond the general viewshed except for the area around Anacapa Island. A moderate reduction would occur in this area due to the fact that approximately one-half of the Proposed Sale No. 68 area inside the sanctuary is around Anacapa and clearly visible from the mainland. Therefore, deleting these tracts would remove most potential visual disruption for the area and leave it with the present aesthetic rating. The reduction in impact would also be noticed in a lessening of a potential oil spill impacting the island; however, this is mainly due to an increase in time of any spill reaching the beach.

The deletion of the area adjacent to the ecological preserve (Alternative 3) will result in a slight reduction to the aesthetic impact by removing the possibility of locating OCS-related structures in the buffer zone.

The deletion of the tracts adjacent to Santa Monica Bay (Alternative 4) will result in a removal of the aesthetic impacts which could occur. The view from the Santa Monica coast and Point Dume would remain as at present with the closest possible OCS structure being over 18 miles west of Point Dume. At this distance, any structure less than 190 ft. tall would not be visible from sea level, and at an elevated height, would only be visible with binoculars on an extremely clear day.

The deletion of tract 165 (Alternative 5) would have a minor change on the aesthetics of the area due to the present structures in the area and the ship traffic proceeding through the precautionary zone.

Delaying the Sale (Alternative 6) would postpone potential impacts, and it is possible that during such a delay there would be an improvement in safety and cleanup equipment, which would lower the potential impact.

Cancelling the Sale (Alternative 7) would, of course, eliminate all Sale-related impacts.

21. Unavoidable Adverse Impacts: There will be some unavoidable adverse impacts to the marine biological community. Oil spills constitute the greatest risk to biota. The impact to intertidal biota is expected to be low to moderate, although it is potentially greater in especially sensitive areas (e.g., Santa Barbara Island, Santa Rosa Island, and portions of San Nicolas Island). The greatest risk to the subtidal benthos is along the Santa Rosa Cortes Ridge including Tanner and Cortes Banks and to the rocky outcrops off Point Conception. Although unlikely, impact to estuaries would be high if spilled oil entered. There is an unknown cumulative risk to the sensitive Channel Islands area.

In the event of a large oil spill, low to moderate ecological losses are expected for surface fishes and temporary economic losses will be incurred by the fishing industry. Impacts from oil spills probably would be greatest in the Inner Banks since this area encompasses the region's most productive fishing grounds and ports. Manmade structures could impact fish and fisheries if they disrupt the critical habitat of a species. It is not possible to determine how significant this impact will be. Mud mounds and trenches from the anchors of pipelaying barges probably will create a high impact to commercial trawlers in the Santa Barbara Channel unless a way is found to resolve this conflict. The impact of trace metals in drilling muds on fish and fisheries is unknown, but could be avoided if drilling muds and cuttings are barged ashore. Vessel traffic, particularly seismic boats, may temporarily cause moderate impacts to the commercial fishing industry, but these impacts could be reduced with proper coordination.

In areas developed, it is expected there will be some decrease in visual values. Some impact to recreation is expected in the event of any oil spill, and the magnitude of the spill will be positively correlated with the impact on recreation.

It is expected that there will be an unavoidable loss of marine archaeological sites, despite mitigating efforts. Such loss will affect both historical and prehistoric sites. It is also possible there will be some effect on subsistence and spiritual activities of the contemporary Native American community. Risk to other ethnic groups is lesser.

It is expected that air quality will be decreased in those areas already exceeding the air quality standards.

22. Relationship between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity: The extraction and consumption of mineral resources would preclude their use in the future and reduce the total reserves. However, should this proposal result in the discovery of additional recoverable resources, known reserves would be increased. Such a discovery could increase the impacts to various resources presently subject to potential risk.

During exploration and production there will be limited interference with the longer-term uses of the environment, such as commercial fishing and recreation. Temporary impacts to marine communities would result from construction and operation of offshore facilities. Short-term losses would include an anticipated, but unquantifiable, reduction in biological productivity, changes in marine habitats, reduction in populations of plankton, nekton, fish, benthos, birds, mammals, and modification of the food web.

Onshore development and Sale-related jobs will cause some population increases and shifts. Long-term socio-economic changes are expected to be slight.

After the completion of oil and gas production, oil spill impacts will not occur, and the marine environment is generally expected to remain at, or return to its normal long-term productivity levels. It has been recognized that continuous low level pollution from toxic chemicals, including oil, may adversely affect long-term productivity. However, there has been as yet no discernible decrease in long-term marine productivity in the Sale area. Until more reliable data becomes available, the long-term effects of the chronic and major spillage of hydrocarbons cannot be accurately projected.

Losses of cultural resources will be permanent as these resources are nonrenewable.

In summary, short-term environmental and socio-economic impacts would result from the proposal. Hydrocarbon reserves would be lowered, although there is the possibility of an increase in known reserves if additional discoveries are made. Some permanent loss of cultural resources is expected. Few long-term productivity or environmental gains are expected as a result of this proposal. Although there may be some increase in environmental knowledge, the benefits principally expected are those associated with a medium-term increase in supplies of domestic hydrocarbons.

23. Irreversible and Irretrievable Commitment of Resources: Leasing of tracts included in Proposed Sale No. 68 would permit development and extraction of the hydrocarbon resources contained therein. The USGS estimates net recoverable resources of 121 million barrels of oil and 280 billion cubic feet of gas. Leasing of the proposed tracts and their subsequent development could result in an irreversible and irretrievable commitment of these resources.

Industrial development in support of offshore development could include the following terrestrial facilities: temporary or permanent service bases, maintenance yards, general shore support, platform and pipeline support, pipelines, landfalls, and marine terminals.

While land usage may be long term, it is not generally considered irreversible. However, where new land uses result in the disruption or destruction of natural features or processes such that return to the previous land use is not possible, an irreversible commitment of resources would ensue. Groundwater depletion could disrupt water supply capabilities, resulting in an irreversible situation, unless other supply sources are obtained.

CHAPTER V

V. REFERENCES

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CHAPTER VI

VI. PRINCIPAL PREPARERS AND SUPPORT STAFF - PACIFIC OCS OFFICE

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Chapter VII

VII. CONSULTATION AND COORDINATION

A. Development of the Proposal

Proposed OCS Sale No. 68 is one of the proposed OCS Sales included in the Five Year OCS Oil and Gas Leasing Schedule. Coordination with other governmental agencies, industry, and the public regarding this proposal began in May, 1979.

Consultation and coordination relative to any proposed OCS Sale is an ongoing process which involves 10 major steps. These ten steps (OCS Planning Schedule, Request for Resources Reports, Call for Nominations and Comments, Tentative Tract Selection, Scoping Meetings, Draft Environmental Impact Statement and subsequent public hearings, Endangered Species Consultation Final Environmental Impact Statement, Coordination with the State and Notice of Sale) involve very extensive contact and interaction with Federal, State and local government, special interest groups and the general public. Each of these steps is discussed in detail in Section I.B.2.

Consultation with FWS and NMFS pursuant to Section 7 of the Endangered Species Act is described in Sections I.B.2.g and VII.D. Consultation with the State Historic Preservation Office pursuant to the National Historic Preservation Act is described in Section VII.E.

Consultation with the U.S. Department of Defense is continuing at the national level. Issues addressed during this consultation will be resolved prior to the proposed lease sale. Appropriate mitigation measures, if any, which need to be applied to tracts in military operating areas will be determined as a result of the consultation. The following tracts are the subject of this consultation: 1-39, 50, 51, 55, 56-59, 98-221.

Consultation with the U.S. Coast Guard concerning the VTSS continue on a case-by-case basis after the proposed lease sale.

Also, in accordance with Departmental Manual 655.1 concerning coordination on oil and gas leasing, local offices of Departmental agencies with interest and expertise were consulted in the development of the lease stipulations for this proposal (see Section I.B.6). A similar consultation with Departmental agencies at a national level will occur prior to the proposed sale.

B. Development of the DEIS

During preparation of the DEIS, Federal, State and local agencies, industry, and the public were consulted in order to obtain descriptive information, to identify significant impacts and issues, and to identify effective mitigating measures and reasonable alternatives to the proposal. Information and comments received during the development of the proposal (described in Section VII.A above) also were used in preparation of the DEIS. In addition, scoping meetings were held following tract selection, with Federal, State, and local agencies and the public in order to identify more clearly and specifically,

issues and alternatives to be studied in the DEIS. A description of the scoping process and its results can be found in Section I.B.2.e. Supplemental information on consultation and coordination which has taken place between specialists on a staff level as part of the scoping process is provided in Section VII.F.

C. Review of the DEIS

The DEIS was sent to federal agencies with interest or expertise in OCS oil and gas leasing, to State and local governments in the affected States, and to organizations and individuals known to have an interest in the proposed lease sale. Copies of the DEIS also were made available to the public upon request. Federal, State, and local agencies that received copies of the DEIS (from the Pacific OCS or Washington, D.C. offices of BLM) and those that responded are noted below. Comments received on the DEIS are discussed in Sections VII.G and VII.H.

Federal Agencies

Environmental Protection Agency*

Marine Mammal Commission*

U.S. Department of Commerce

National Oceanic and Atmospheric Administration*

Office of Coastal Zone Management

U.S. Department of Defense*

Department of the Army, Corps of Engineers

U.S. Department of Energy

U.S. Department of State

U.S. Department of the Interior

Bureau of Indian Affairs

Bureau of Mines

Fish and Wildlife Service

Geological Survey*

National Park Service*

U.S. Department of Transportation

Office of Pipeline Safety Operations

Office of Safety Affairs

U.S. Coast Guard*

U.S. Federal Energy Regulatory Commission*

U.S. Nuclear Regulatory Commission*

State Agencies

State of California

Air Resources Board*

Department of Fish and Game*
Department of Parks and Recreation*
Office of Historic Preservation
Department of Water Resources*
Secretary for the Agency
State Lands Commission*
State Water Resources Control Board
Regional Water Quality Control Boards

State of Washington
Department of Ecology

Local Agencies

City of Avalon*
City of Carlsbad
City of Carpinteria
City of Chula Vista
City of Costa Mesa
City of Coronado
City of Del Mar
City of El Segundo
City of Hermosa Beach
City of Huntington Beach
City of Imperial Beach
City of Irvine
City of Laguna Beach
City of Long Beach
City of Los Angeles
City of Manhattan Beach
City of National City
City of Newport Beach
City of Oceanside
City of Oxnard*
City of Ontario
City of Ojai
City of Palos Verdes Estates
City of Port Hueneme
City of Rancho Palos Verdes
City of Redondo Beach*
City of Riverside
City of San Clemente
City of San Diego
City of San Juan Capistrano
City of Santa Barbara*
City of Santa Monica*
City of Seal Beach
City of Simi Valley
City of Torrance
City of Thousand Oaks
City of Ventura

City of Yorba Linda
County of Los Angeles
County of Orange*
County of San Diego
County of Santa Barbara*
County of Ventura*
Malibu Township Council
Port of Long Beach*
San Diego Association of Governments*
South Coast Air Quality Control Districts*

* Written comments received

** Testimony at public hearings only

D. Consultation with FWS and NMFS Pursuant to Section 7 of the
Endangered Species Act

1. Fish and Wildlife Service - Biological Opinion
2. National Marine Fisheries Service - Biological Opinion



1. Fish and Wildlife Service - Biological Opinion
United States Department of the Interior

ADDRESS ONLY THE DIRECTOR
FISH AND WILDLIFE SERVICE

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES BLM/GS 81-1

APR 29 1981

Memorandum

To: ☒ Director, Bureau of Land Management
Director, U.S. Geological Survey

Ref. to 4/30

Associate
From: Director

Subject: Section 7 Biological Opinion, Proposed Outer Continental Shelf
Oil and Gas Leasing and Exploration in the Southern California
Bight (OCS Sale No. 68)

By memorandum of January 13, 1981 (copy attached), the Bureau of Land Management (BLM) and the U.S. Geological Survey (GS) requested joint formal consultation on the proposed leasing of the Southern California Outer Continental Shelf (OCS) for oil and gas exploration as indicated in the 5-Year Leasing Schedule released in June 1980. The proposed lease sale in the Southern California Bight (SCB) region is Sale No. 68. This consultation includes all existing OCS activities, Sale No. 68 activities pertaining to OCS oil and gas leasing and exploration in the area of southern California from Point Conception south to the U.S./Mexico border and additional OCS sales anticipated for this area through 1984. In May 1978, the GS requested a formal Section 7 consultation and on November 1, 1979, received a biological opinion on a previous SCB Lease Sale (Sale No. 48).

In response to your request, a consultation team was appointed by memorandum of February 6, 1981 (copy attached), to assist me in determining whether the proposed OCS sale and subsequent exploration are likely to jeopardize the continued existence of species which are federally listed as Endangered or Threatened or result in the destruction or adverse modification of Critical Habitat.

On February 17 and 18, 1981, the Fish and Wildlife Service (FWS) consultation team met with your representatives and representatives from the National Marine Fisheries Service (NMFS) to discuss the proposed leasing and exploration (see attached attendance list). Through prior correspondence between the FWS and the Pacific OCS Office (POCS), it was determined that the listed species which may be affected by the proposal and that fall under the jurisdiction of the Department of the Interior are as follows: southern sea otter (Enhydra lutris nereis), brown pelican (Pelecanus occidentalis), California least tern (Sterna albifrons browni), American peregrine falcon (Falco peregrinus anatum), bald eagle (Haliaeetus leucocephalus), California condor (Gymnogyps californianus), light-footed clapper rail (Rallus longirostris levipes), Santa

Barbara song sparrow (Melospiza melodia graminea), San Clemente sage sparrow (Amphispiza belli clementeae), San Clemente loggerhead shrike (Lanius ludovicianus mearnsi), Island night lizard (Klauberina riversiana), Palos Verdes blue butterfly (Glaucopsyche lygdamus palos verdesensis), El Segundo blue butterfly (Euphilotes [=Shijimiaeoides] battoides allyni), San Clemente broom (Lotus scoparius ssp. traskiae), San Clemente Island bush-mallow (Malacothamnus clementinus) San Clemente Island larkspur (Delphinium kinkiense), San Clemente Island Indian paintbrush (Castilleja grisea), salt marsh bird's beak (Cordylanthus maritimus ssp. maritimus), and Critical Habitat for the American peregrine falcon, California condor, and the Palos Verdes blue butterfly.

There are no proposed species in the project area. After reviewing the proposed activities and biological data on the above species, we have determined that the following species will not be affected because they are outside the area expected to be impacted by the proposed oil and gas leasing and exploration activities: the California Condor and its Critical Habitat, San Clemente loggerhead shrike, San Clemente sage sparrow, San Clemente broom, San Clemente Island bush-mallow, San Clemente Island larkspur, San Clemente Island Indian paintbrush, and the Island night lizard. Because they will not be affected, they were not considered in this consultation.

There is general agreement among ornithologists who have searched for song sparrows on Santa Barbara Island during the breeding season that the Santa Barbara song sparrow is extinct. Therefore, the Santa Barbara song sparrow is not considered in this consultation. Should new information indicate that this species may occur on Santa Barbara Island, Section 7 consultation will be required if a "may affect" determination is made.

The consultation team reviewed numerous reports, publications, and other information including the Final Environmental Impact Statement for Sale No. 48 and the draft Oilspill Risk Analysis (OSRA) for the Southern California (Proposed Sale No. 68) Outer Continental Shelf Lease Area, GS Open File Report 80. On February 19, 1981, a member of the consultation team met with Frank Gress and Dan Anderson in Davis, California, to discuss oil and gas leasing, exploration, and development in the SCB relative to the listed brown pelican. In addition, numerous telephone contacts were made with knowledgeable experts. Copies of pertinent reports, documents, and records are maintained in an administrative record at the Office of Endangered Species (OES) and are incorporated by reference in this opinion.

Project Description

BLM acts as the Secretary of the Interior's agent in arranging for and processing bids on offshore oil and gas lease sales. After the issuance of the leases, GS assumes the authority to administer the lease areas. Among other things, this includes the approval of exploratory and development/production plans submitted by the lessee.

As per your January 13, 1981, request for a regional consultation on the OCS oil and gas program in the SCB, this biological opinion considers all

existing operations pertaining to oil and gas leasing and exploration in the offshore area from Point Conception south to the U.S./Mexico border and the planned OCS Sale No. 68, and additional sales anticipated in this area through June 1984. Although this consultation considers the proposed sales through June 1984, BLM and GS should remain in close contact with OES to insure that new circumstances which may develop do not impact listed species and that agency obligations to conserve listed species are effectively met. OES concurs with BLM's contention that future sales proposed for this region constitute new information and that formal consultation should be reinitiated at the appropriate time. Should new species be listed which may be affected, this consultation should be reinitiated. In addition, BLM and GS are required to confer with OES if species which may be impacted by OCS activities are proposed for listing as Endangered or Threatened.

Lease Sale No. 68 consists of 218 blocks with a total area of about 1,112,975 acres (445,190 hectares), to be offered for lease in June 1982. BLM has indicated that a reduction in the number of tracts offered in Lease Sale No. 68 can be expected before the actual sale takes place. Included within such a reduction would be 11 complete tracts and portions of 26 others which are contained within the Channel Islands National Marine Sanctuary because leasing would conflict with the sanctuary status. However, in the March 30, 1981, Federal Register (46 FR 19227), the National Oceanic and Atmospheric Administration (NOAA) published a Notice of Deferral regarding regulations which would prohibit hydrocarbon development within the Sanctuary, pending reconsideration in accordance with Executive Order 12291. Oil and gas activities within the Marine Sanctuary near Anacapa Island would increase the degree of threat from oilspills to brown pelicans breeding on the Island.

The tracts being offered for lease comprise three subareas: the Santa Barbara Channel containing the Western and Eastern Santa Barbara Channel; the Inner Banks containing the Anacapa Area, Santa Monica Basin and the San Pedro Area; and the Outer Banks containing the area south of Santa Rosa Island, San Nicholas Basin, Dall Bank, Southeast Tanner Bank and Santa Tomas Knoll. The tracts range from Point Conception to south of San Clemente Island and lie in waters from about 150 to 4,900 feet (46 to 1,500 meters) deep. The tracts are no closer than 3 statute miles from shore and range seaward to 84 miles. A draft Environmental Impact Statement (EIS) on this proposed Sale is scheduled for publication in May 1981, with a final EIS scheduled for release in November 1981.

Exploration of the OCS requires certain onshore support facilities including office space, helicopter and/or fixed-wing aircraft facilities, docks for boating activities, and supply bases. Due to the uncertain nature of oil exploration, companies are generally unwilling to construct new facilities to support exploration activities and usually prefer to utilize existing areas and facilities. At present, the numerous onshore facilities in southern California which are being used for Sales Nos. 35, 48, and other exploration activities will support any proposed new exploration.

There is a possibility of oilspills occurring during the exploratory phase of OCS activity. Spills may be from two sources: 1) small spills which occur

during the handling of fuel oil, and 2) blowouts of exploratory wells. The first source is minor and is not expected to result in any noticeable increase in oil pollution. Therefore, this impact is considered negligible. A blowout, however, can cause the release of significant amounts of hydrocarbons into the marine environment and may affect listed species. The Campeche, Mexico, oilspill is a dramatic example of an exploration blowout. While the exact causes of the Campeche blowout are likely to remain unknown, it appears that operational procedures, rather than technology, were at the root of the accident. It is thought that this spill could have been avoided had operating procedures used in the United States been employed.

In the United States, OCS Operating Orders require that a number of safety devices and procedures be employed to prevent such an accident. These include the use of blowout preventers, strict drilling procedures, regular testing of safety equipment, training of personnel, regular inspection by GS personnel, and approval by GS of all drilling plans and modifications. According to statistics compiled by GS, the probability of a blowout occurring during exploration in the offshore waters of the United States is remote.

This biological opinion considers all existing OCS operations pertaining to oil and gas, the leasing and exploration phases of planned OCS Sale No. 68, and proposes sales in the SCB area through June 1984 and assumes that existing onshore facilities will continue to be utilized for exploration activities. Should the use pattern of these facilities be changed or additional onshore facilities be required which may affect listed species or their habitats, you must reinitiate consultation. Development and production phases are included only in an advisory and cumulative sense. Should exploration activities reveal the presence of significant amounts of hydrocarbons, this consultation must be reinitiated prior to entering the development and production phases of OCS activities.

BIOLOGICAL ACCOUNTS

Accounts of the biological information considered in this biological opinion follow:

American Peregrine Falcon (Falco peregrinus anatum)

The American peregrine was listed as Endangered on June 2 and October 13, 1970, and a portion of the peregrine's Critical Habitat was designated in the August 11, 1977, Federal Register. This subspecies once occurred widely throughout much of North America from southern Alaska and Canada, to northern Mexico. This peregrine is migratory in the northern portion of its breeding range, but exhibits less migratory behavior toward the southern portion of its range. In California, the species once occurred throughout the State where cliff faces and steep rocky slopes provided suitable nesting locations. The mountains, sea coast, and Channel Islands historically harbored significant populations.

The principal cause of the peregrine's decline has been contamination by chlorinated pesticides. Other factors contributing to the birds' decline include shooting, predation, egg collection, disease, falconers, human disturbance at nesting sites, collisions with power lines, and loss of habitat due to human encroachment. There were 39 known nesting pairs of peregrine falcons in California in 1980, up from 31 nesting pairs in 1979. The increased numbers of known breeding pairs are due to increased observation efforts and a probable limited increase in the population. It is estimated that 50 to 60 pairs of peregrine falcons presently occur in California.

Several historic eyries are located along the coast from Point Conception south to the Mexican border. At present, however, there are no known active sites south of the eyrie at Morro Bay. Considerable effort is currently being expended toward recovery of this species, chiefly through captive propagation and reintroduction. The Channel Islands include several sites where reintroduction efforts may eventually be made. Natural expansion of American peregrines is anticipated with the decreased usage of residual pesticides.

Three potential sources of impact to peregrine falcons may occur from OCS leasing and exploration activities in southern California: disturbance to eyrie sites resulting from development of onshore facilities and increased human activity, the possibility of an oilspill reaching the coast and contaminating its food sources, and the possibility of a falcon coming in contact with oil and contaminating its eggs. The diet of peregrine falcons is almost exclusively birds, and like most raptors, the peregrine is an opportunistic feeder. Birds such as ducks and shorebirds which become contaminated as a result of an oilspill would be compromised in their ability to fly and to avoid capture. Oiled birds would be easy prey for the peregrine falcon, which might suffer potentially lethal effects from consuming petrochemically contaminated prey.

Dr. F. Prescott Ward, Ecology Branch, Department of the Army, captured and released an oiled peregrine in the course of his peregrine falcon migration study at Chincoteague National Wildlife Refuge (NWR) in Virginia. The bird was subsequently encountered a total of 36 times by Dr. Ward, during which time the effects of oiling on the peregrine were documented. Generally, feather wear was quite dramatic, as feathers became matted and eventually were worn or broken. This condition likely compromises the flight and predatory capabilities of the peregrine, thereby reducing the likelihood of survival.

Presently, the threats to peregrine falcons from oil and gas activities in the SCB are minimal. As true migration probably does not occur with the American peregrine falcon in southern California, and the Arctic peregrine falcon (Falco peregrinus tundrius) is considered a rare migrant along the Pacific coast, there would not be a seasonally susceptible influx or concentration of peregrines in the SCB. In addition, the BLM and GS have determined that the probability of a spill occurring during exploration activities is minimal.

Therefore it is my biological opinion that the proposed leasing and exploration activities in southern California are not likely to jeopardize the continued

existence of the American peregrine falcon, and as its Critical Habitat is not in the project area, it is not likely to result in the destruction or adverse modification of the Critical Habitat.

However, the Service would like to alert the BLM and the GS to the possibility of future releases of peregrine falcons in southern California, particularly in the Channel Islands area. The Draft Recovery Plan indicates an intent to establish a minimum of five pairs of peregrine falcons on the Islands, probably by hacking (a modified version of the falconer's technique for training raptors for release into the wild). Should this recovery effort be initiated, the BLM and GS would be required to reinitiate Section 7 consultation if it is determined that OCS activities may affect the peregrine falcon.

California Least Tern (Sterna albifrons browni)

The California least tern was listed as Endangered in the Federal Register on October 13, 1970. Critical Habitat has not yet been designated for this subspecies. The least tern migrates from Mexico each spring to establish breeding colonies on the California coast. From April to September it occupies coastal habitats between the Pacific coast of Baja California and the San Francisco Bay.

The least tern usually chooses a nesting location in an open expanse of sand, dirt, or dried mud close to a lagoon or estuary where food can be obtained. Prey consists of small fish such as the northern anchovy, deepbody anchovy, jacksmelt, topsmelt, California grunion, shiner surfperch, California killifish, and mosquitofish. The reduction in numbers of least terns has resulted from the loss of feeding and nesting habitats and disruption of nest sites by human-associated activities.

Potential threats to the California least tern from oil and gas activities are related to oil spills and increased human activities in coastal areas where nesting colonies occur. The birds could be contaminated by a spill as they dive for food. This may contribute to direct mortality or result in reduced hatchability of eggs oiled from the fouled plumage of an adult bird. Toxicology studies have indicated that even small amounts of oil applied to an egg are toxic to the embryo. Oil spills cause severe damage when they enter coastal wetlands, and could contaminate prey species and/or their habitat thus destroying essential feeding areas for the terns.

As onshore development is expected to be limited to existing facilities during the exploratory phase, no disturbance to least tern habitat is expected to occur as a result of leasing and exploration activities. In addition, the probability of a spill occurring during exploration activities is remote.

Therefore, it is my biological opinion that leasing and exploration activities are not likely to jeopardize the continued existence of the California least tern.

To assist GS in implementing its responsibility for the conservation of the species, the following recommendation is given: GS should require that all

Oilspill Contingency Plans include provisions for the deployment of adequate containment equipment into the areas listed as essential habitat in the California Least Tern Recovery Plan. The necessary equipment must be located so that it can be onsite and deployed within 2 hours to protect least tern areas that are threatened by a spill.

The areas identified in the California Least Tern Recovery Plan as essential habitat for least terns are: Mission Bay; Sweetwater Marsh Complex; Tijuana River Estuary; South San Diego Bay; North San Diego Bay; Los Penasquitos Lagoon; San Diequito Lagoon; San Elijo Lagoon; Batiquitos Lagoon; Aqua Hedionda Lagoon; Buena Vista Lagoon; Santa Margarita River; Santa Ana River; Anaheim Bay/Huntington Harbor; San Gabriel River/Alamitos Bay; Harbor Lake; Terminal Island; Playa del Rey; Mugu Lagoon; and Ormond Beach. Maps of these areas were included in the November 1, 1970, biological opinion to GS.

Palos Verdes Blue Butterfly (Glaucopsyche lygdamus palosverdesensis)

The Palos Verdes blue butterfly was listed as Endangered in the Federal Register on July 2, 1980. The three localities on the Palos Verdes Peninsula (Los Angeles County) where the only known populations occur are designated as Critical Habitat.

This butterfly was once known from four restricted localities on the Palos Verdes Peninsula. The Palos Verdes blue butterfly has been extirpated from one area due to housing development, and two other localities have been adversely affected by weed control practices that threaten the coastal chaparral colonies of Astragalus trichopodus leucopsis (the butterfly's only host plant). The rototilling of weeds for fire prevention and other similar land management practices, in addition to housing development and increased recreational use (especially at one locality that has been designated a city park) threaten the continued existence of the Palos Verdes blue butterfly.

As onshore development during the exploration phase is expected to be limited to existing facilities, no disturbance to the Palos Verdes blue butterfly's Critical Habitat is expected to occur as a result of leasing and exploration activities.

Therefore, it is my biological opinion that the leasing and exploration activities are not likely to jeopardize the continued existence of the Palos Verdes blue butterfly or result in the destruction or adverse modification of its Critical Habitat. However, any activity authorized, funded, or carried out by a Federal agency, particularly activities associated with OCS development and production, will require Section 7 consultation if the Palos Verdes blue butterfly and/or its Critical Habitat may be affected.

Light-footed Clapper Rail (Rallus longirostris levipes)

The light-footed clapper rail was listed as Endangered in the Federal Register on October 13, 1970. Critical Habitat has not yet been designated for this

subspecies. Historically, the clapper rail's range extended from Santa Barbara County, California, to San Quintin Bay, Baja California, Mexico. Currently, this subspecies probably occurs in 16 California marshes (from Goleta Slough in Santa Barbara County south to the Tijuana Estuary in San Diego County) and at least two marshes in Baja California. The distribution is markedly interrupted because of discontinuous habitat. Over harvesting may have occurred in some areas of the clapper rail's range, but reductions in populations can be attributed almost entirely to loss of habitat. It has been estimated that over 65 percent of its former habitat has been lost through reclamation of marshes, water diversion, restriction of tidal flow, and degradation by water pollution.

The light-footed clapper rail is found in saltwater marshes traversed by tidal sloughs, where cordgrass (Spartina foliosa) and pickleweed (Salicornia) are the conspicuous plants. Food consists of various invertebrates (crustaceans, mollusks and annelids) found in tidal coastal marshes.

Estimates now indicate a total population of about 250 birds on the basis of work in Santa Barbara and Ventura Counties at Anaheim Bay and at Tijuana Estuary. Through the efforts of the Light-footed Clapper Rail Recovery Team, a plan to stabilize this species through land acquisition and marsh management has been approved.

Potential threats from oil and gas activities could be from oilspills and increased human activities in the estuaries where existing rail populations occur. However, BLM and GS have determined that the possibility of an oilspill during leasing and exploration activities is remote, and it is expected that existing onshore facilities will be utilized during these phases of OCS activities.

Therefore, it is my biological opinion that the leasing and exploration activities are not likely to jeopardize the continued existence of the light-footed clapper rail.

To assist GS in implementing its responsibility for the conservation of the species, the following recommendation is given: GS should require that all Oil-spill Contingency Plans include provisions for the deployment of adequate containment equipment into the areas listed as essential clapper rail habitat. The necessary equipment must be located so that it can be onsite and deployed within 2 hours to protect clapper rail areas that are threatened by a spill. Those areas considered to be essential to clapper rails are: Mission Bay; Sweetwater River complex; Tijuana River Estuary; South San Diego Bay; San Diego River mouth; Los Penasquitos Lagoon; Upper Newport Bay; Anaheim Bay; Mugu Lagoon area; Carpinteria Marsh; and Goleta Slough. Maps of these areas were included in the November 1, 1979, biological opinion to GS.

El Segundo Blue Butterfly (Euphilotes [=Shijimiaeoides] battoides allyni)

The El Segundo blue butterfly is an insect endemic to the southern California coastal strand. This species was listed as Endangered in the Federal Register

on June 1, 1976. Critical Habitat has not yet been designated for this species. This butterfly is limited to two small remnants of the once extensive El Segundo Dunes system (36 square miles) extending from the Los Angeles Airport to San Pedro, in Los Angeles County. Its current distribution is limited to dunes adjacent to the Los Angeles Airport and a small parcel of commercially owned land on the Chevron oil refinery in El Segundo.

The El Segundo blue is dependent upon coastal dune habitat which contains two species of buckwheat (Eriogonum ssp.) that provide the butterfly with nesting, feeding, and resting habitat. The conversion of this essential dune habitat to urban development threatens the continued survival of this species.

Onshore activities such as the expansion of refineries and the placement of pipelines present the greatest threat to the destruction of this species' habitat. Possible development scenarios for OCS Sale No. 68 identify a proposed offshore pipeline route for the Anacapa-Santa Monica Basin, with a temporary operational support base near El Segundo. There could be approximately 3 kilometers (2 miles) of buried onshore pipeline at El Segundo. Once the precise location of the above structures has been determined in future development plans, it will be necessary to reinitiate Section 7 consultation if a "may affect" determination is made.

However, since existing onshore facilities are to be used during OCS leasing and exploration, it is my biological that these phases of oil and gas activities are not likely to jeopardize the continued existence of this species.

Bald Eagle (Haliaeetus leucocephalus)

The bald eagle was initially considered to have two distinct subspecies. The southern bald eagle was listed in the Federal Register as Endangered on March 11, 1967. The entire species was listed as Endangered in 43 of the conterminous 48 States (including California) and Threatened in the remaining five States on February 14, 1978. Critical Habitat has not been determined.

This large bird occurs from Alaska to northern Mexico, and lives in association with aquatic habitats such as lakes, large rivers, and estuaries. Historically the Channel Islands had a minimum of 24 nesting pairs of bald eagles. The birds were known to have nested on the Islands until the mid 1950's. The extirpation of nesting bald eagles on the Channel Islands was attributable to a number of causes. Tourists and sheepherders annually killed eagles. Egg collecting, and increased use of the Islands by tourists and residents, and sonic booms from military jet aircraft all contributed to the decline.

The possible role of DDT in the decline of the bald eagle on the Channel Islands is unclear. DDT was introduced into the southern California marine ecosystem in the late 1940's. It is generally accepted that DDE (a DDT metabolite) was the agent involved in the egg shell thinning and subsequent decline of the populations of brown pelicans and double-crested cormorants occupying the Channel Islands. It is possible that the reproduction of the remnant bald eagle population on the larger islands was impacted, thus dealing the final blow to the Channel Islands population.

In 1980, the Institute for Wildlife Studies (IWS), Arcata, California, released (translocated) six immature bald eagles from Washington State on Santa Catalina Island in an attempt to reestablish eagles on the Channel Islands. It is believed that five of the six birds have adapted to Santa Catalina, and the IWS has plans for the release of an additional six eagles in 1981 (and in subsequent years), pending receipt of the appropriate Federal Fish and Wildlife Permit. Ron Jurek, the Pacific Bald Eagle Recovery Team Leader, has identified the Channel Islands as the highest priority area for reestablishing bald eagles in California through translocation efforts.

The potential impacts to the eagle from oil and gas activities are disturbances to its nesting areas resulting from onshore activities, and the possibility of an oilspill reaching the coast and subsequently oiling the eagles and/or contaminating their food source. Oiled eagles returning to the nest could contaminate the eggs or nestlings. Toxicological studies have indicated that even small amounts of oil applied to an egg are toxic to the embryo.

No onshore oil and gas development is proposed for the Islands. Currently there are no eagles nesting on the Islands, although that is an objective of the translocation project. Further, it has been the observation of the IWS that eagles released on Santa Catalina Island are foraging heavily on feral pigs and goats (including carrion). This pattern of feeding behavior reduces the likelihood of negative impacts from oilspills, specifically the ingestion of petrochemically contaminated fish.

Therefore, it is my biological opinion that OCS leasing and exploration in the area is not likely to jeopardize the continued existence of the bald eagle in southern California. However, any activity or program authorized, funded, or carried out by a Federal agency, particularly activities associated with development and production, will require Section 7 consultation if the bald eagle may be affected. Should significant new information relative to the bald eagle become available, you must reinitiate Section 7 consultation.

Salt Marsh Bird's Beak (Cordylanthus maritimus ssp. maritimus)

Salt marsh bird's beak is an annual herb (15-30 cm high) with purple flowers, that inhabits the upper elevations of tidal salt marshes. Populations of bird's beak are associated with pickleweed (Salicornia) and salt grass (Distichlis) near elevations at and above high tide. The bird's beak was listed in the Federal Register as Endangered on September 28, 1978. Critical Habitat has not yet been determined.

Historically, this subspecies occurred from Carpinteria in Santa Barbara County south to San Diego County and Northern Baja California, Mexico. Today, distribution is restricted to the Sandyland Marsh (Carpinteria) in Santa Barbara County, Point Mugu in Ventura County, and the Tijuana River Estuary in San Diego County. Destruction of coastal salt marshes is the major factor responsible for the elimination of this wetland species.

The Carpinteria Marsh area and the Tijuana River Estuary are in public ownership; and since existing onshore facilities will be utilized, the potential for further destruction of the existing habitat of the bird's beak from OCS activities has been reduced. The probability of an oilspill reaching this species' habitat is minimal.

Therefore, it is my biological opinion that OCS leasing and exploration in the southern California area is not likely to jeopardize the continued existence of the salt marsh bird's beak.

To assist GS in implementing its responsibility for the conservation of the species, the following recommendation is given: GS should require that all Oilspill Contingency Plans include provisions for the deployment of adequate containment equipment into the Sandyland Marsh (Carpinteria), Point Mugu, and Tijuana River Estuary. The necessary equipment must be located so that it can be onsite and deployed within 2 hours to protect bird's beak habitat threatened by a spill.

Any activity or program authorized, funded, or carried out by a Federal agency, particularly activities associated with development and production, will require Section 7 consultation if the salt marsh bird's beak may be affected.

Southern Sea Otter (Enhydra lutris nereis)

The population of sea otters in California was listed as Threatened in the Federal Register on January 14, 1977 (42 FR 2968). Critical Habitat has not been determined for this species. The listing notice stated that "A major spill of oil from a tanker in the waters in the vicinity of the range of the southern sea otter is probably the most serious potential threat to these animals; and indeed, they are more susceptible to this problem than most species."

The historic range of sea otters extended from Morro Hermoso, Baja California, northward along the coast, becoming continuous with the populations now found along the Alaska Peninsula and westward. Historic abundance of otters in California was estimated at about 16,000 animals.

Sea otters were heavily exploited for their pelts by Russian and American fur traders from 1786 through the early 1900's. The California population of the sea otter was so depleted that it was thought to be extinct by the turn of the century. The "rediscovery" of the southern sea otter by the scientific community occurred in 1938 when a group of approximately 50 otters were observed near Bixby Creek, just north of Point Sur (Figure 1). The International Fur Seal Treaty of 1911 and California State laws enacted since 1913 established legal protection for the species by prohibiting the taking and possessing of sea otters. In 1941 the California Sea Otter Refuge was established to further protect the otter from being shot. The Marine Mammal Protection Act of 1972 and the Endangered Species Act (ESA) of 1973 have increased the legal protection of the California sea otter population.

The range expansion of the southern sea otter population from its nadir in 1914 to its occupied range in 1979 averages 1.80 miles per year southward and 1.06 miles per year northward. In the last 5 years, however, the southward expansion of range has averaged 4 miles per year. The current range extends along approximately 200 miles of coast between Soquel Point in Santa Cruz County, south to Oceano, San Luis Obispo County. A few wandering individuals have been sighted to the north and south of these range limits. Provided the population continues to increase, the population should eventually extend its range south to the Channel Islands and north beyond Point Ano Nuevo. At the current rate of expansion it is possible that the otter's range could reach Point Conception, the northern limit of Sale No. 68, in the next 12 to 14 years (1993-1995). This natural rate of expansion, would extend the range of the sea otter to include the Channel Islands Marine Sanctuary, by 1995. This timeframe is well within the production life of Sale No. 68, estimated to be from 1987 through 2006, and will be within the timeframe of future sales in this same area.

The California Department of Fish and Game (CDFG) has attempted to monitor sea otter population growth (Figure 2, Table 1 attached). Based on estimates of population size between 1940 and 1969, the average annual rate of increase was 5.4 percent. This rate of increase is comparable to that seen in Alaskan populations. A CDFG census in 1976 estimated the population to be approximately 1,760 animals. A similar census in 1979, estimated the population at 1443 individuals. Although this census was impaired by poor weather conditions, the best available data does not indicate a change in the population size. FWS biologists believe that the approximate size of the present population has not changed substantially since 1976, and probably numbers about 1800 animals. In comparison with open-ended populations in Alaska, the California population is growing at a rate slower than one would expect. There are three general explanations for this: (1) age-specific fecundity is different; (2) age-specific survival is different (including human-caused mortality); and (3) animals are being lost through emigration. It is not known which of the three theories, or which combination of them, is responsible for the slow rate of population growth.

The southern sea otter exhibits a dumbbell shaped distribution pattern along the California coast. The largest concentrations are located at the periphery of the range. These groups (fronts) are predominantly composed of both breeding and non-breeding males. The size of frontal groups varies seasonally. Peak numbers occur in late winter and early spring. Breeding females, juvenile females, and dependent pups are principally distributed throughout the center of the range. Kelp beds die back in the winter and storms further reduce the remaining beds. Consequently, the concentrations of otters rafting in the remaining kelp beds become larger, and the distribution of otters tends to become more clumped during the winter.

Insulation from cold seawater is provided entirely by air trapped in the dense sea otter fur. They maintain a high metabolic rate which partially compensates for the lack of an insulation layer of subcutaneous fat. Otters consume about 25 to 35 percent of their body weight per day, and foraging occurs intermittently throughout each day. Sea otters consume a variety of invertebrate species. Sea urchins, abalone, rock crabs, and pismo clams appear to be selectively preyed

upon whenever they are available. As areas are occupied for longer periods by sea otters, the availability of large invertebrates decreases and smaller species such as turban snails, kelp crabs, mussels, and octopuses are more readily consumed. Sea otters show a great capacity for adapting to the availability of prey in different habitats. A major factor limiting the sea otter's range of foraging is the availability of food. Southern sea otters rarely dive beyond 20 fathoms when foraging since most food species become more scarce at greater depths. The greatest abundance and diversity of food items occur in areas with rocky bottoms. This may account for the relatively slow rate of expansion that occurs in these areas. Conversely, the fastest rates of expansion tend to occur over areas with sandy bottoms.

Southern sea otters rarely emerge from the sea. When resting at sea, they often wrap themselves in kelp to remain stationary. In winter when kelp beds are reduced, they may raft some distance offshore without the benefit of kelp -- waiting out a storm, but usually they seek the protection of sheltered coves. Sea otters are non-migratory, although seasonal movements of individual otters within the constant range do occur.

An oilspill on the OCS could impact sea otters in several ways. The extent to which sea otters are affected by oil is influenced by the type of oil spilled, weather conditions, physical geography of the area, type of local marine flora and fauna, previous exposure of the area to oil, exposure of the area to other pollutants, and treatment of the spill.

Direct contact with oil would mat the fur and decrease the otter's natural insulation against temperature loss, resulting in hypothermia and probable death of individuals. The effects of oiling sea otters was studied by Kooyman and Costa (1979). Their studies indicated that under certain conditions sea otters can sustain low levels of oil contamination when 20 percent or less of the body surface is oiled. Kooyman and Costa concluded that contamination of 30 percent or more of the body surface will probably result in death. These conclusions appear to be supported by the findings of other research specialists. Presently available data do not conclusively demonstrate the effects of low level oil contamination on sea otters.

The ability of sea otters to detect oil in their environment is unknown. It has been reported that otters may react to the repugnant odors of petroleum products and move to avoid them. However, over 100 sea otters died as a result of pollution around Paramushin Island when gasoline and diesel fuel spilled from a tanker that went aground at Vasil' Yeu Cape. Investigations have shown that sea otters in captivity will not avoid oil contaminated areas and even repeatedly enter such areas after initial exposure.

Constant grooming to maintain the insulating quality of their coat would result in the direct ingestion of some petroleum products. Ingestion of petroleum products may also occur while eating contaminated invertebrates. Geraci and St. Aubin (1979) report that ingested oil is potentially toxic to sea otters. Although long-term effects of ingestion are unknown, certain petroleum hydrocarbons are potent carcinogens.

The present range of the southern sea otter population is in close proximity to onshore human communities where offshore oil development and increased transportation is either underway or planned. With the increase in offshore oil development and tanker traffic, there exists an increasing possibility of oil contamination within the otter's range. However, the sea otter does not presently inhabit the area considered in this consultation. The prevailing wind and ocean current patterns offshore southern California indicate a remote possibility that hydrocarbons spilled in the SCB would travel north and impact any portion of the sea otter's present population. This suggests that oilspills from presently leased tracts in SCB and those proposed in Sale No. 68 are not likely to impact sea otters in their current range. Further, BLM and GS have determined that oilspills during OCS exploratory activities are a remote possibility.

Therefore, it is my biological opinion that the leasing and exploration activities are not likely to jeopardize the continued existence of the southern sea otter. Any activity or program authorized, funded, or carried out by a Federal agency, particularly those related to proposed onshore facilities and development/production related activities, will require Section 7 consultation if sea otters may be affected. When the sea otter migrates into this area, you must reinitiate Section 7 consultation.

Brown Pelican (Pelecanus occidentalis)

The California brown pelican was originally listed as Endangered on October 13, 1970 (35 FR 8320). To date no Critical Habitat has been designated for this species. The only regular breeding colonies of this subspecies on the U.S. Pacific coast are located on Anacapa Island and nearby Scorpion Rock. During the 1980 breeding season, pelicans nested and successfully fledged young at Santa Barbara Island for the first time since 1967. The breeding population is augmented from late July through early November by large numbers of pelicans which regularly disperse north from Mexican waters. These migrants are generally gone by early December. However, it has been recently determined that some pelicans from Mexico are regularly recruited into the Anacapa breeding population. Pelicans are rarely found far from salt water, or farther than 20-30 miles offshore. Their major food is small fishes, primarily northern anchovy (Engraulis mordax) which the pelicans capture near the surface by plunge-diving from the air.

During the late 1960's and early 1970's the Anacapa colony suffered catastrophic nesting failure due to DDT and its derivatives accumulating in reproducing adults. A Los Angeles sewage system receiving liquid wastes from a DDT manufacturing plant was discharging effluent into the California coastal marine environment. Subsequent disposal of these wastes in a sanitary landfill resulted in a sharp decline of DDT input into the sea from this sewage system. Thereafter, levels of these compounds decreased in brown pelicans, and while the fledging rate has continued to fluctuate, it has not dropped to the low numbers experienced earlier.

There is a lack of specific information available relative to the effects which an oilspill might have on the population dynamics and reproductive success of pelicans. Contrary to statements made by Chevron U.S.A., Inc. before the

California Coastal Commission (1980), pelicans do not avoid oil. Pelican mortality due to oil fouling in the Gulf of California has occurred on at least two occasions. The only known incident of significant numbers of pelicans being oiled was after a spill from the Navy vessel Manatee in August, 1973. Concentrations of light tar washed up on beaches from San Clemente south into Mexico. Twenty to 25 juvenile pelicans were found oiled. In contrast, no pelicans were reported oiled as a result of the January 1969, Santa Barbara oilspill. Judging only from the location of the spills, the results should have been reversed, but timing was the determinant factor in these cases. The San Clemente spill occurred in the late summer when large numbers of pelicans were dispersed throughout the area. The Santa Barbara spill occurred in the winter, following a severe storm, when relatively few pelicans were in the area and fewer still would have been far from shelter. The San Clemente spill indicates that large amounts of oil anywhere within the pelicans' range could cause significant damage at the wrong time of year. In 1980, the pelican breeding season in southern California was 6.5 months long.

Pelicans may be affected by oilspills through contamination of their plumage since they dive for food or drift on the water surface. This may contribute to direct mortality or result in reduced hatchability of eggs oiled from the fouled plumage of an adult bird. As young pelicans fledge, they often congregate in large numbers on the water surface near the colony or on rocks along the shore. Young pelicans do not at first range far from the colony. If an oilspill occurred during the breeding season and impacted pelican nesting islands, the effects would be detrimental to the young pelicans and likely cause some mortality. In the fall and winter months when pelicans are not breeding, the thousands of Mexican pelicans which join the California coastal birds are vulnerable to oiling as they plunge-dive for food extensively throughout the waters of the SCB.

In southern California, the abundance of the anchovy resource varies almost unpredictably from year to year. "Brown pelicans depend on anchovies; their reproductive rates and survival vary with variations in the availability of anchovies" (Anderson et al. 1980). Unfortunately, there is little data currently available identifying the impacts (if any) which oilspills may have on the anchovy resource and its consequent availability to pelicans. However, three major areas of concern are recognized; 1) an oilslick may obscure the ability of foraging pelicans to visually locate anchovies, 2) petrochemically contaminated anchovies ingested by pelicans may cause lethal or sub-lethal effects, and 3) should a reduction in anchovy biomass occur as a result of an oilspill, this decrease in the prey base available to pelicans would reduce the potential for recovery of this listed species.

Adult pelicans incubating eggs or tending young commonly feed near the colony particularly in the Santa Barbara Channel just north of Anacapa Island. The pelicans depend on nearby food resources (30-50 km) during that period of time when they are incubating eggs or caring for young. Oilspills impacting the waters near Anacapa Island (or any breeding colonies) may reduce the availability of anchovies in critical foraging areas during the breeding season. Adult pelicans would find it necessary to forage greater distances from the

colony, thus subjecting the eggs and/or young to increased periods of exposure to the elements and predation.

Since existing onshore oil and gas facilities would be utilized, and the possibility of an oilspill occurring from exploration activities is minimal, it is my biological opinion that the leasing and exploration activities are not likely to jeopardize the continued existence of the brown pelican. However, any activity or program authorized, funded, or carried out by a Federal agency, particularly those related to proposed onshore facilities, development/production related activities, and any OCS activities within the Channel Islands Marine Sanctuary, will require Section 7 consultation.

In accordance with OCS Operating Order No. 7, the proper authorities must be notified in the event of an oilspill occurrence. To insure maximum protection to pelicans, we recommend that following an oilspill GS require that oil containment equipment be deployed to bays and estuaries that might be impacted and that are inhabited by brown pelicans.

Cumulative Effects Resulting From OCS Activities

Cumulative effects are considered to be the direct and indirect effects of actions that are interrelated or interdependent with the action under consideration. Indirect effects of the action under consideration are those that are caused by the activity and are later in time or farther removed in distance, such as the progression from leasing OCS tracts, to exploration and ultimate development/production of the hydrocarbon resources. Other actions will be considered interrelated with the action if they are all part of a larger action, and other actions will be considered interdependent if they do not have significant independent utility apart from the action that is under consideration. The various lease sales, exploration, and development/production activities conducted and/or authorized by BLM and GS offshore southern California are considered part of the total OCS program for southern California. Further, companies involved in the OCS program utilize the same onshore support facilities, helicopter and/or fixed-wing aircraft facilities, docks, supply bases, pipelines, etc., for different OCS sale activities and activities from different sales.

There are currently 23 oil refineries operating in the southern California area that at full capacity are capable of processing 1,365,420 barrels of oil per day. This means that during the probable 25-year life of the Sale 68 fields, 12.5 billion barrels of oil must be provided to fully utilize the existing refineries. Whatever is not produced in the area will have to be imported, and transported oil has historically posed a much higher oilspill risk than drilling and producing locally. GS estimates that during the 25-year period, 7.373 billion barrels of oil will be imported through Los Angeles harbor. California onshore production will contribute 2.6 billion barrels. California State Tidelands will contribute 720 million barrels. Existing Federal OCS leases in southern California will contribute 788 million barrels and Sale 68 leases will contribute 123 million barrels (assuming that the total amount of projected oil is found and produced).

The probability of oilspill occurrence is predicated on the fundamental assumption that realistic estimates of future spill frequencies can be based on past OCS experience. The assumption is made that spills occur independently of each other and that the spill rate is dependent upon the volume of oil produced or transported. Figures 3, 4, and 5 (attached) show the known proposed and existing lease tracts for southern California OCS Sales, and the transportation routes for both OCS oil and imported oil. Table 2 (attached) shows the transportation scenarios for the proposed and existing lease tract group.

GS utilized the above information in combination with the data available in their accident files, production records, and information on tanker accident rates obtained from the published literature, to derive the overall spill predictions shown in Table 3 (attached). Transportation scenario 2 oilspill estimates are slightly higher than scenario 1 as a result of increased use of tankers to transport the oil under scenario 2.

This data supports the determination that there is an existing high probability of an oilspill impacting southern California resources due to the existing State and Federal leases and the high level of imported oil required to support existing refineries (See Figures 4-8 attached). The OSRA predicts that Lease Sale No. 68 could represent a 4 percent increase in spill potential; that is, increase the most likely number of spills from 22 to 23.

Clearly, the major threat to brown pelicans (and other listed species) from oilspills results from existing leases and tanker traffic, and not from Sale No. 68 alone. To further amplify this point, one need only examine the OSRA data for Anacapa Island, the major brown pelican breeding colony in the SCB. The probability of an oilspill (over 1,000 barrels) occurring and striking Anacapa Island within 30 days, is 8 percent when considering proposed tracts in Sale No. 68 only (transportation scenario 1). The probability increases to 78 percent under the same circumstances when existing and proposed leases and tanker traffic are considered. It should be noted that for both of these cases, the probabilities are slightly higher under transportation scenario 2. This demonstrates the futility of recommending specific tract deletions from Sale No. 68 to minimize or reduce oilspill threats to brown pelicans. This problem for pelicans is further complicated with the knowledge that large amounts of oil anywhere within the pelicans' range (which includes the SCB) could cause significant damage to the species if spilled at the wrong time of year (see brown pelican species account).

An ill-timed oilspill could significantly impact and/or reduce the brown pelican population in southern California. But the pelican population has demonstrated a remarkable resiliency over the past 12 years. The Anacapa Island breeding colony recovered from reproductive catastrophies of 4, 1, and 7 young produced from 1969 through 1971, to fledge 1438 young in 1980. While the total number of birds fledged is encouraging, the number of young fledged per nest in 1979 and 1980 was only .78 and .67 respectively. This is still far below the estimated productivity of 1.0 young fledged per nest which is indicative of a stable population. The large number of young fledged is probably a result

of immigration of breeding adults from Mexican populations. Recruitment from Mexican pelican populations might mitigate or diminish the negative impacts which an oilspill off southern California might have on pelicans occurring in this area. However, the Service is concerned about the cumulative oilspill risks/impacts to brown pelicans and other listed species from existing and proposed oil and gas activities in southern California. While development scenarios remain speculative pending the results of exploration activities, it is apparent that GS's current cumulative estimate of 23 oilspills (of over 1,000 barrels), approximately one spill per year, in the Lease Sale No. 68 area over the life of the sale, is a threat to pelican populations which occur in the SCB. Whereas a subsequent biological opinion regarding the effects of OCS oil and gas development/production in southern California is dependent upon the results of exploration activities, present GS estimates of the hydrocarbon resource and production scenarios indicate that future development/production operations may be likely to jeopardize to the potential for recovery of the listed brown pelican.

No pelican losses from OCS activities off southern California or from nearby activities in the State tidelands have been reported to date, but development is just beginning in areas leased in previous OCS lease sales. Additional threats from OCS Sale No. 48 have been reduced by the withdrawal of tracts that were close to Anacapa Island. In addition to existing southern California OCS activities and proposed actions from Sale No. 68, two additional OCS Sales, Nos. 73 and 80, are scheduled for 1983 and 1984, respectively. The exact sale locations have yet to be determined, but should they occur in southern California, this would serve to further increase the cumulative impacts of OCS activities on listed species.

The Service would like to remind the BLM and GS of their continued obligation to conserve listed species throughout all phases of OCS activities. Although, for purposes of this consultation, only leasing and exploration actions relative to Sale No. 68 are considered, it is reasonable to conclude that leasing and exploration leads to the development and production of commercial deposits of hydrocarbons, and the inherent risks of oilspills. Therefore, we recommend that GS require the lessee to assign a high priority and prescribe specific measures for the protection of Anacapa Island, Scorpion Rock and Santa Barbara Island, in all Oilspill Contingency Plans submitted to GS for exploration (or development/production), and for activities that might result in substantially increased tanker traffic over the identified transportation routes. We further recommend that proposed pipeline segment T 17 be eliminated from all transportation scenarios. The OSRA estimates that oil spilled along this route has a 76 percent probability of striking Anacapa Island.

The FWS is encouraged to note that preferred transportation scenario 1 would utilize pipelines from platforms located in the Santa Barbara Channel and Santa Monica area to transport oil to shore. The inherent risks of transporting oil are reduced when using pipelines instead of tankers, thus the risks of oilspills to Anacapa Island are likewise reduced. The FWS urges BLM and GS to incorporate transportation scenario 1 into their future development/productions plans for Sale No. 68.

Currently, the range of the southern sea otter does not extend south of Oceano, San Luis Obispo County. This is approximately 50 miles north of Point Conception, Santa Barbara County, the northern limit for lease Sale No. 68. According to the information provided to the Service by BLM and GS, the sea otter (within its present range) will not be impacted by OCS activities in southern California. However, since 1977 the sea otter has expanded its range south by an average of 4 miles per year. Should this present rate of expansion continue, the sea otter would occur within the Lease Sale No. 68 area during the probable 25-year life of the Sale 68 fields. If the sea otter remains a listed species under the ESA, GS's present estimates of the hydrocarbon resource and production scenarios indicate that future development/production operations may be likely to jeopardize the continued existence of this listed species.

Advisory Statement

The FWS wishes to advise the BLM and GS of a number of activities presently taking place or proposed in the southern California area which may affect listed species. While the following projects/actions are not subject to this consultation, Federal agencies should take these activities into account during their planning process as they strive to accomplish their objectives and meet their obligations to conserve listed species.

1. The present controversy over the commercial fishery/brown pelican utilization of a common resource, the northern anchovy (Engraulis mordax), causes concern for the pelican's welfare. Brown pelicans depend on anchovies. Regurgitation studies at nesting colonies indicate that anchovies comprise 90-95 percent of the diet. Obviously, the management of these two species cannot be dealt with separately. Under the Fisheries Conservation and Management Act (FCMA) of 1976, responsible agencies are required to formulate management plans on all important commercial species of fish in order to insure optimum yield, with guaranteed perpetuation of that resource, and minimal impact to the rest of the system that contains that resource, i.e., to minimize the ecological effects of harvest. A major conflict is the multiple-use aspect of the resource: converting the anchovy resource to optimum yield to satisfy needs of all users (including wildlife).

The Anchovy Management Plan (1978) was one of the first management plans prepared under the FCMA. It was prepared by the Pacific Fisheries Management Council, a multi-agency group consisting of fishery biologists and fishery management specialists. In southern California the abundance of the anchovy resource varies almost unpredictably from year to year, but the plan attempts to provide a constant "forage reserve" for wild consumers of about 1 million tons (about one-fourth of maximum abundance) and only allows a proportion of the biomass over that forage reserve to be taken. The California Department of Fish and Game has developed computer capabilities for modeling anchovy populations given different harvest levels. However, one of the major weaknesses in the entire management and monitoring system seems to be the estimations of anchovy biomass and the need to incorporate much more data on the fish and wildlife consumers into the system.

The anchovy resource appears to be overfished, the three main indicators of this being population sex ratios, increasing mackerel population, and the Mexican harvest. Continued expansion of fishing fleets and pressure may eventually lead to overharvest of the Mexican segment of the anchovy population. This situation would likely prove detrimental to brown pelican populations south of the U.S./Mexico border. So far, negotiations for joint management of the northern anchovy fishery with Mexico have failed. Because of international uncertainties, it becomes most prudent that stewardship of U.S. pelican populations demonstrate foresight and maximum sensitivity.

The national and international commercial fishing pressures on the anchovy biomass, alone or in tandem with increasing oil and gas activities in the southern California area, may ultimately threaten the continued existence and recovery of the brown pelican.

2. The feasibility and practicality of translocating sea otters to formerly occupied habitat(s) within their historical range, for the purpose of establishing a second population is being examined and potential release sites are being reviewed. Every effort must be made to insure the protection and restoration of the sea otter population. This can be done most effectively by the combination of three means: a) by minimizing impacts associated with human activities especially those relating to oil, b) by protecting their natural habitat within all relevant portions of the otter's historical range, and c) by enhancing the population to a level such that the possibility that the otter will be decimated by a large-scale oilspill (its greatest threat) is eliminated.

At present the fastest and most direct method for insuring the continued existence of the California sea otter population is by eliminating the threat of decimation by a major oilspill. The most practical method to eliminate this threat and to restore the sea otter population to a non-threatened status in a timely fashion is by establishing a second population.

Early experimental translocations (1950's) of Alaskan sea otters failed. Failure of these operations was attributed primarily to insufficient knowledge of the role that sea otter pelage plays in thermoregulation. Duration and method of transport were the principal problems. During the period from 1965 to 1972, the Alaska Department of Fish and Game in cooperation with State, Federal, and Canadian provincial agencies translocated a total of 708 sea otters to unoccupied habitats in Alaska, British Columbia, Washington, and Oregon. The first apparently successful translocation of sea otters was initiated in 1965. In 1965 and 1966, 53 otters from the Alaskan population were released in Klag Bay, southeastern Alaska. Surveys conducted by the Alaska Fish and Game (in 1971) and the U.S. Fish and Wildlife Service (in 1975) indicate success in establishment of the translocated populations. The formula for a successful translocation and the reasons for failure are complex and not clearly understood. It is possible to reestablish sea otters in unoccupied habitat, but it appears to require a relatively large nucleus population. Those translocation attempts that were

made closest to the captive location have been most successful. While the Service has not identified a specific translocation site, for the southern sea otter, Friends of the Sea Otter, a private special interest organization, has indicated an interest in San Nicolas Island in the Channel Islands. This area is currently being studied under a Service Cooperative Agreement with the Center for Coastal Marine Studies, University of California, Santa Cruz. The broad objectives of this program are: a) to further assess the suitability of San Nicolas Island as habitat for the sea otter, b) to describe the structure and organizations of littoral and sublittoral communities at San Nicolas with the thought that this information will serve as baseline data with which to compare changes following the introduction or natural reestablishment of sea otters, and c) through detailed observational and experimental study, elucidate over time, specific mechanisms responsible for maintaining community structure.

The Channel Islands area may be determined to be the most appropriate translocation site for the sea otters. In this event, commercial and private fishing interests, in conjunction with petroleum development industries, would likely oppose any effort by Federal, State, and private conservation organizations to translocate sea otters to the Channel Islands area. However, with the increase in offshore oil development and tanker traffic, there exists the increasing probability of oil contamination within the otter's present range. Increased threats from oil contamination amplify the urgent need to establish a second population, thus diminishing the potential catastrophic effects of a large-scale oilspill on California sea otters. The BLM and GS should be aware of the possibility of a translocation into the southern California area, and cognizant of their responsibility to reinitiate Section 7 consultation should it be determined that OCS activities may affect the southern sea otter. Should a second population of sea otters be established, BLM and GS would be required to insure that their actions do not jeopardize the continued existence and recovery of this population of southern sea otters.

3. The Space Shuttle may generate over-pressures (sonic booms) detrimental to marine species in general and listed species in particular. There are particular environmental concerns for disturbances to nesting birds (unnatural flushing from the nest may cause egg breakage or subject nest contents to predation), habitat damage from sonic boom induced landslides, and actual physical damage to the inner ears of birds and mammals. The long-term nature of the Space Shuttle Program (through at least 1991) means that wildlife conservation problems will need to be anticipated early, monitoring will need to be continued and measures taken to eliminate the impacts where necessary.

4. Future projects to prevent beach erosion, dredging projects, and port improvement or expansions will cause environmental concerns which may impact coastal listed species.

5. The possible sitings of liquified natural gas and refinery facilities may impact listed species. Impacts could result from the location of the facility and also from the transportation routes associated with the movement of the gas or oil from the offshore area to onshore facilities.

6. The incidence of chronic oil pollution in southern California may impact listed species. There are estimated to be as many as 2,000 to 2,665 natural oil seeps off the Santa Barbara coastline. These seeps may be releasing as much as 670 barrels of oil per day into the marine environment. Estimates are not firm because the rate of seepage is not constant. The impact from these natural spills, together with the expected number of spills from existing and proposed oil and gas activities in southern California, compound the oilspill risks to listed species. This cannot be quantified due to the variable nature of both the seeps and spills.

7. Should the aforementioned Notice of Deferral from NOAA regarding regulations which would prohibit hydrocarbon development within designated Marine Sanctuaries be permanently accepted, the Anacapa Island brown pelican nesting colony might be threatened by offshore hydrocarbon development in much closer proximity than initially believed.

8. The State of California leases tracts within three nautical miles of the coast. These activities generate the placement of pipelines, increased crew boats/supply boats and helicopters servicing the rigs, possible construction of additional processing facilities, and increased tankering which may affect listed species.

Conclusion

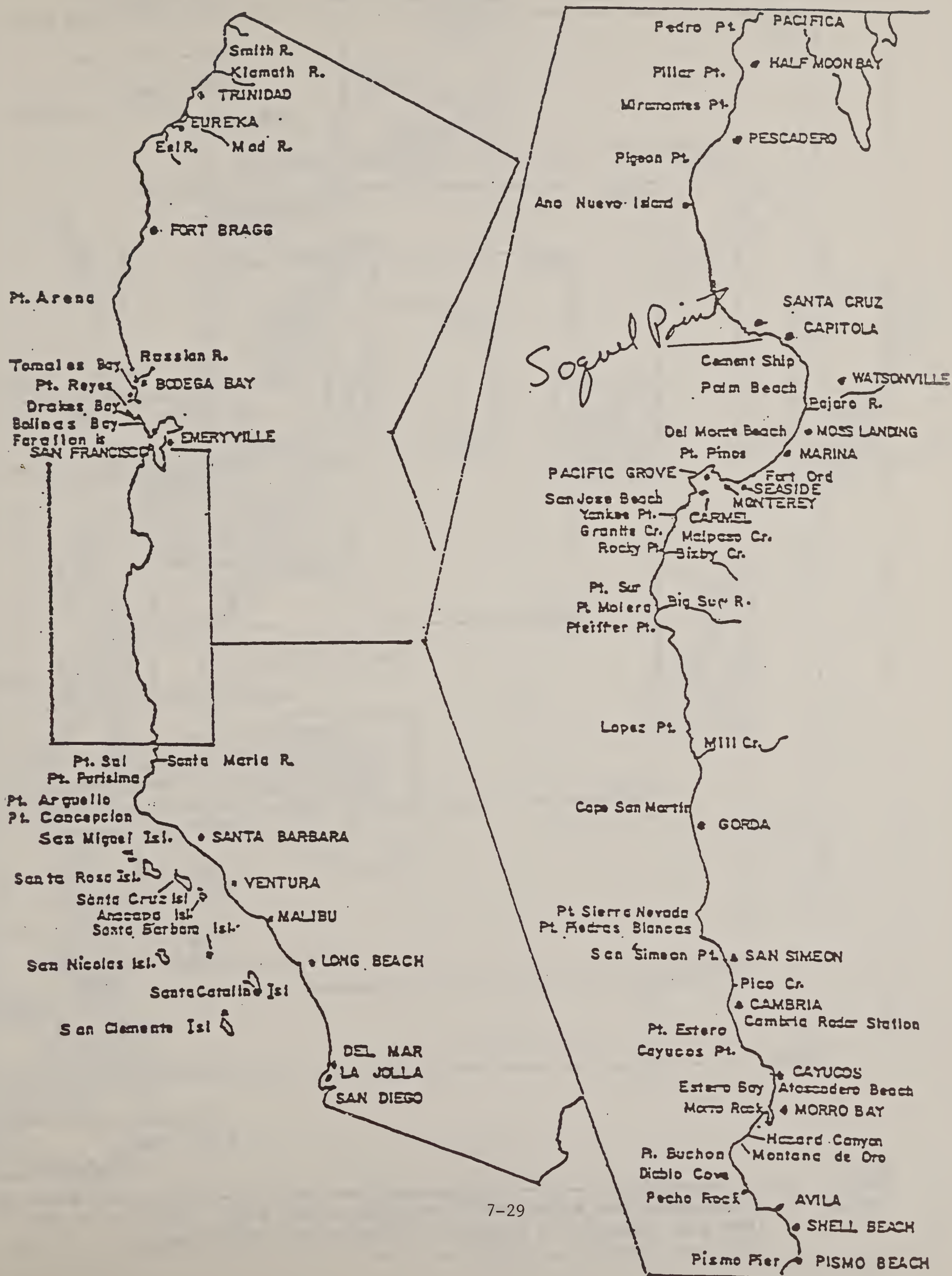
Based on my consultation team's review of the above information and other information and data available to the Service, it is my biological opinion that the OCS leasing and exploration activities in the SCB are not likely to jeopardize the continued existence of the listed species considered herein or result in the destruction or adverse modification of their Critical Habitats. Should the use of facilities other than those currently being used for OCS activities be desired, consultation must be reinitiated if listed species may be affected. This biological opinion considers the effects of oil and gas leasing and exploration activities only. Once the results from exploratory activities are known and the specific development/production plans are available in satisfactory detail, BLM and GS must initiate Section 7 consultation if a "may affect" situation is determined and the Service will provide a biological opinion on the impacts of these phases of OCS activities on listed species. While the biological opinion on leasing and exploration indicates no jeopardy to listed species, the discussion throughout this opinion should serve as an early warning to BLM and GS of potentially significant problems to listed species should development and production be warranted. Based on the FWS's analysis of the data presently available and the current (and reasonably foreseeable future) status of listed species in the project area, there is reason to be particularly concerned for the continued existence of sea otters and brown pelicans. In facing these potential problems BLM and GS should be cognizant of their responsibilities under the Endangered Species Act to utilize their authorities for the conservation of listed species. I encourage BLM and GS to work closely with the Office of Endangered Species to overcome these potential problems and insure the continued existence of listed species.

If a new species which may be affected should be listed, or additional pertinent information becomes available, or the project description, as discussed above, is changed, Section 7 consultation must be reinitiated.

Ronald E. Lamberton

Attachments

Figure 1 - Map showing localities mentioned in text.



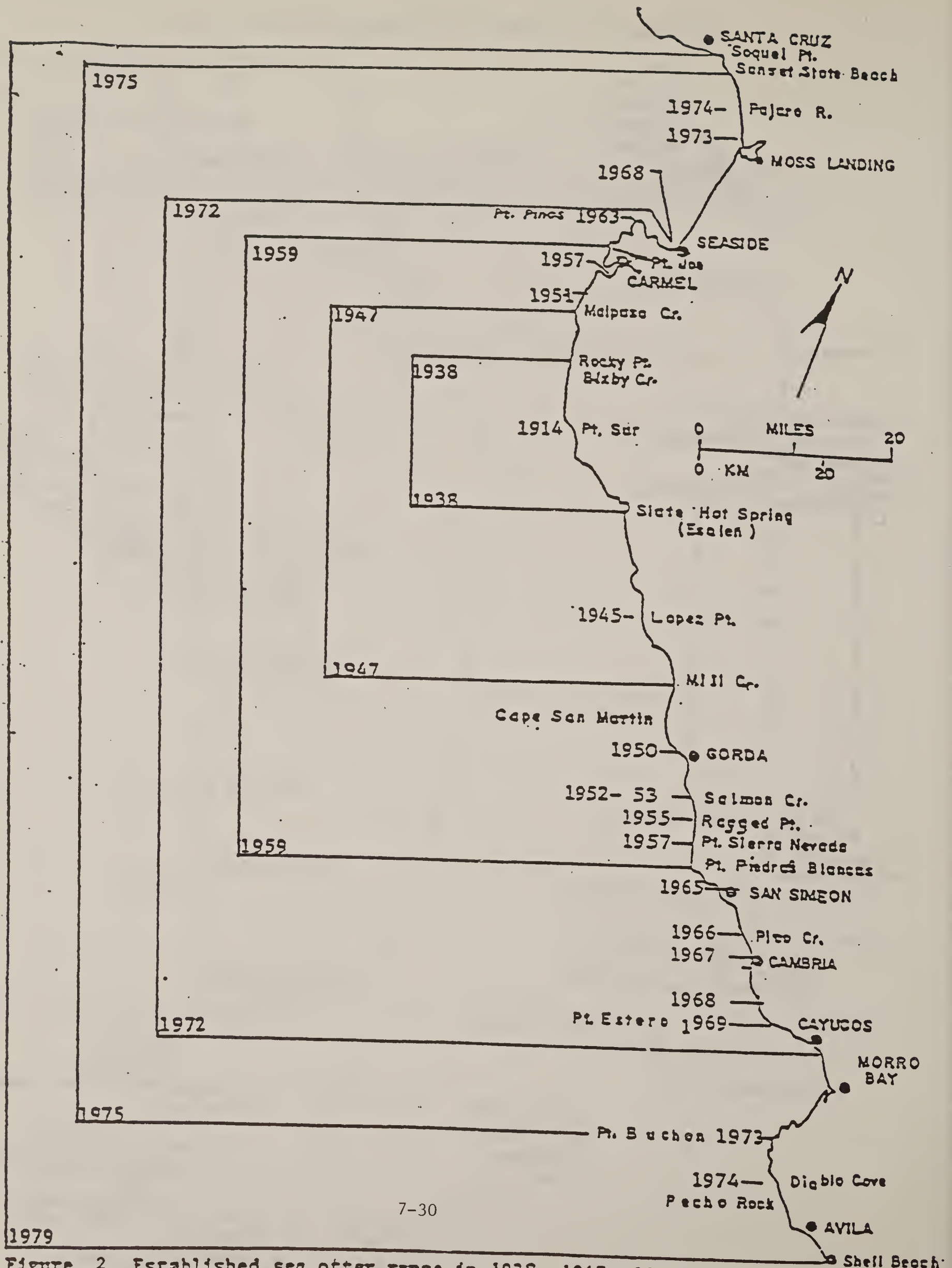


Figure 2 Established sea otter range in 1938, 1947, 1959, 1972, 1975, and 1979 and location of peripheral groups in other years.
(Adapted from CDFG. 1976)

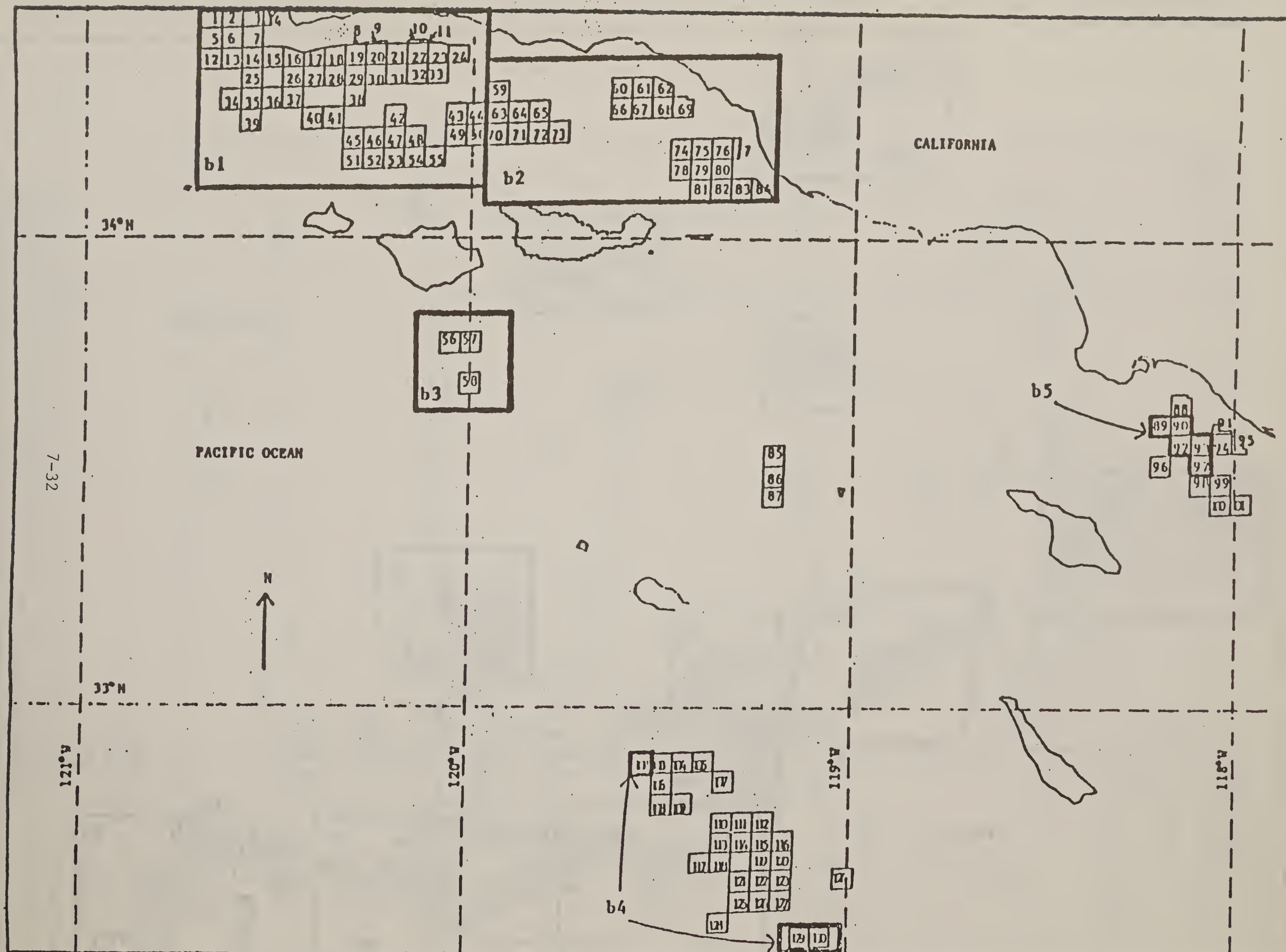


Figure 4.--Map showing the five subdivisions (b1-b5) of the existing lease tracts (E1-E32) in the Southern California Outer Continental Shelf Lease Sale 68. Tracts not included in any subdivision were:

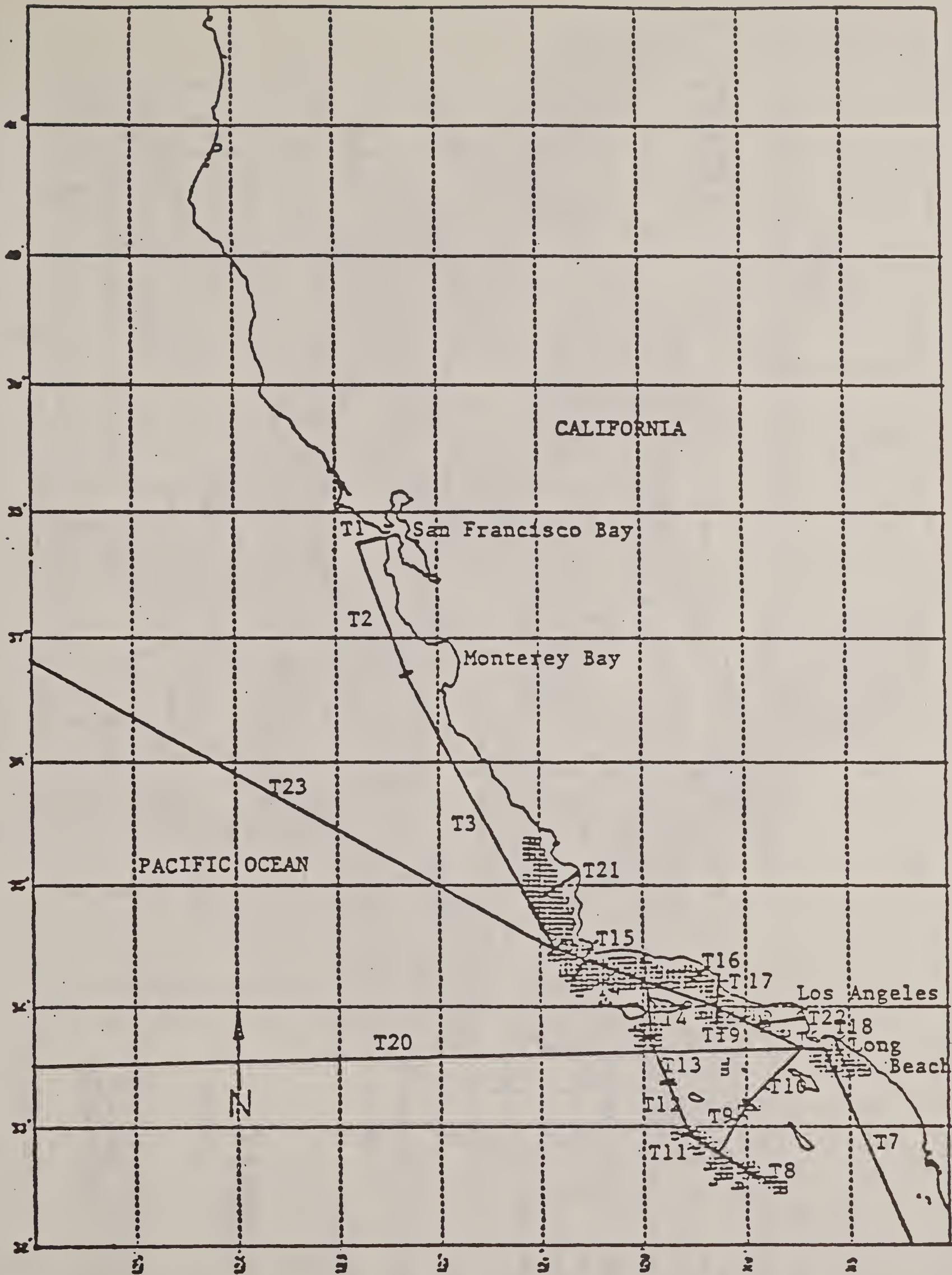
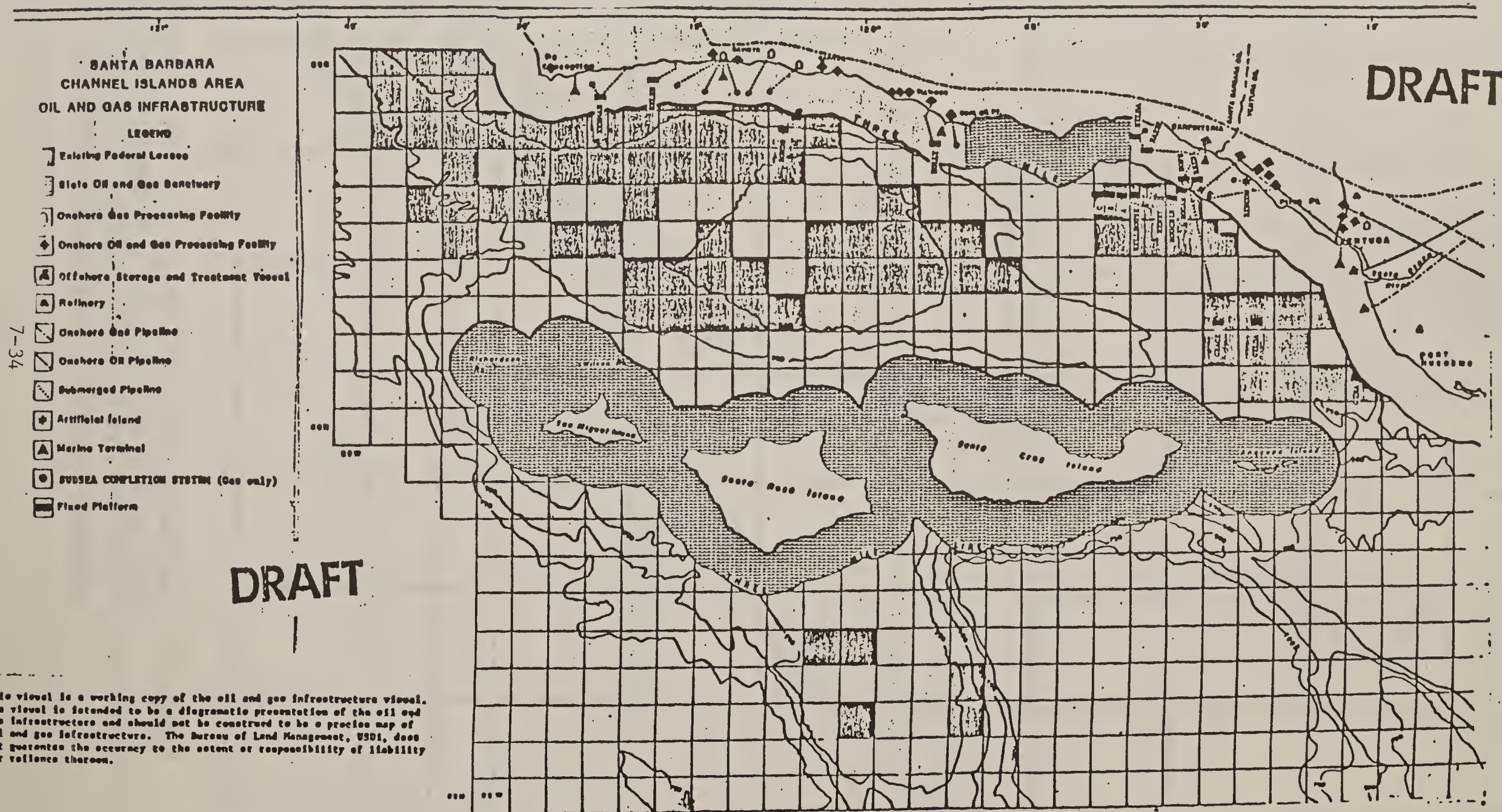


Figure 5 --Map showing the transportation route segments (T15 to T18 and T21, T22 are proposed pipelines; T1 to T14 and T19, T20, T23 are proposed tanker routes), polygons represent proposed and existing lease tracts.

Figure 6



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









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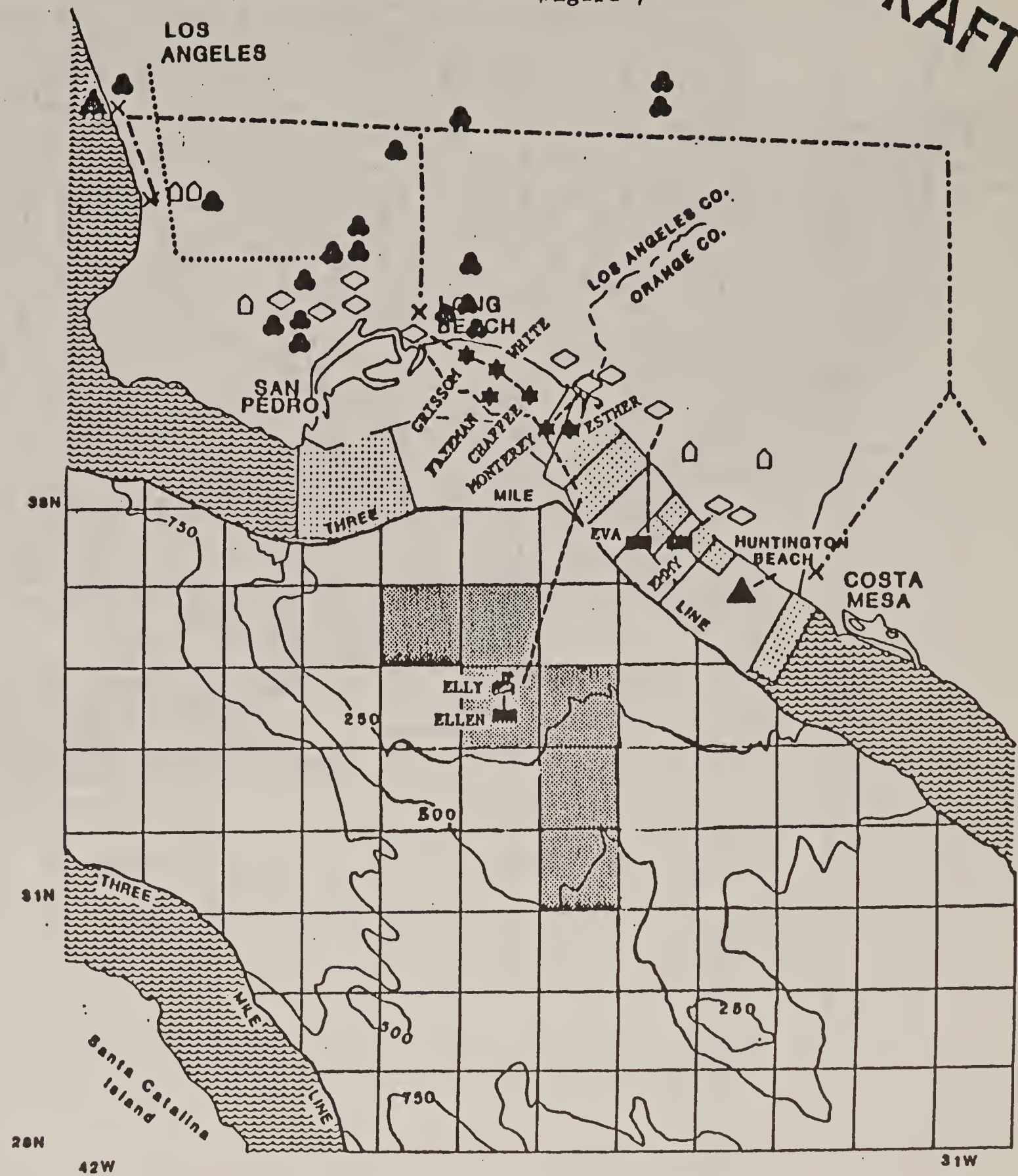
Figure 7

SAN PEDRO BAY AREA

OIL AND GAS INFRASTRUCTURE

LEGEND

-  Existing Federal Leases
-  State Oil and Gas Sanctuary
-  Fixed Platform
-  Fixed Production Platform
-  Submerged Pipeline
-  Artificial Islands
-  Marine Terminal
-  Onshore Oil & Gas Processing Facility
-  Onshore Gas Processing Facility
-  Refinery
-  Onshore Gas Pipeline
-  Gas Distribution Facility
-  Offshore State Leases
-  Onshore Oil Pipeline



This view is a working copy of the oil and gas infrastructure view. The view is intended to be a diagrammatic presentation of the oil and gas infrastructure and should not be construed to be a precise map of oil and gas infrastructure. The Bureau of Land Management, USDI, does not warrant the accuracy or completeness of this information.

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Figure 8



LEGEND

- EXISTING FEDERAL LEASES
- PROPOSED TRACTS SALE No. 53
- PROPOSED TRACTS SALE No. 58
- CHANNEL ISLANDS MARINE SANCTUARY
- CALL AREA
- DELETIONS

Table 1 Range and Population Expansion of the Sea Otter Along the California Coast, 1914 to 1980. (Updated from CDFG, 1976)

Year	Location of Migrant Front		Increase in Range in Statute Miles			Average Increase in Miles per Year			Linear Miles of Range	Total Miles ² of Habitat to 20 fm	Total Estimated Population	Years Between Estimates
	Northern	Southern	to North	to South	Total	to North	to South	Total				
1914	Pt. Sur.	(Pfeiffer Pt.)	-	-	-	-	-	-	(7)*	(9.0)*	(50)*	-
1933	Rocky Pt.	Slate Hot Springs	7	(13)	(20)	0.29	(0.63)	(0.92)	27	18.4	310	24
1947	Malpaso Cr.	Mill Cr.	5	14	19	0.56	1.02	1.58	46	36.5	530	9
1950	Yankee Pt. (1951)	Gorda	1	8	9	0.33	2.67	3.00	55	46.2	660	3
1955	Pt. Lobos South Shore	Ragged Pt.	2	10	12	0.40	2.00	2.40	67	59.2	800	5
1957	Pescadero Pt.	Pt. Sierra Nevada	7	4	11	3.50	2.00	5.50	78	66.0	880	2
1959	Pt. Joe.	Pt. Piedras Blancas	4	4	8	2.00	2.00	4.00	86	74.2	1,050	2
1963	Otter Pt.	San Simeon	3	6	9	0.75	1.50	2.25	95	84.7	1,190	4
1966	Lover's Pt.	Pico Cr.	0	4	4	0.00	1.33	1.33	99	92.0	1,260	3
1969	Seaside	Pt. Estero	4	8	12	1.33	2.67	4.00	111	105.2	1,390	3
1972	Seaside	Cayucos Pt.	0	9	9	0.00	3.00	3.00	120	125.2	1,530	3
1973	Mar Landing	Pt. Pichon	14	18	32	14.00	18.00	32.00	152	142.0**	1,720	1
1974	Pajaro River	Diablo Cove	4	3	7	4.00	3.00	7.00	159	?	1,730	1
1975	Smear State Beach	Mahla Cove	5	0	5	5.00	0.00	5.00	164	?	?	1
1976	Mio Del Mar	Pecho Rock	6	4	10	6.00	4.00	10.00	174	?	1,789	1
1977	Soquel Pt.	Point San Luis	5	4	9	5.00	4.00	9.00	183	?	?	1
1978	Soquel Pt.	Point San Luis	0	0	0	0	0	0	183	?	?	1
1979	Soquel Pt.	Sunset Palisades	0	4	4	0.00	4.00	4.00	187	?	1,443***	1
1980	Soquel Pt.	Océano	0	8	8	0.00	8.00	8.00	195	?	?	1
TOTALS			69	117	186	1.06	1.08	2.86	193	?	?	66

* No records, rough assumptions made (see text).

** Square miles of foraging habitat along Pismo clam beaches are considered 0.50 miles² per linear mile of sandy beach.

*** Poor weather conditions during the survey diminished the accuracy of this census (see text).

? Unknown

Table 2 --Transportation scenarios for the proposed
and existing lease tract groups.

Platform Location	Scenario	Transportation	Route(s)
a1	1	Pipeline	T15
a1	2	Tanker	T4,T5,T6
a2	1	Pipeline	T15,T16
a2	2	Tanker	T4,T5,T6
a3	1	Pipeline	T16
a3	2	Tanker	T5,T6
a4	1 and 2	Pipeline	T22
a5	1 and 2	Pipeline	T22
a6	1 and 2	Pipeline	T18
a7	1 and 2	Tanker	T19,T6
a8	1 and 2	Tanker	T10,T6
a9	1 and 2	Tanker	T11,T9,T10,T6
a10	1 and 2	Tanker	T8,T9,T10,T6
b1	1 and 2	Pipeline	T15
b2	1 and 2	Pipeline	T16
b3	1 and 2	Tanker	T19,T6
b4	1 and 2	Tanker	T11,T8,T9,T10,T6
b5	1 and 2	Pipeline	T18
c1	1 and 2	Pipeline	T21
c2	1 and 2	Pipeline	T21
c3	1 and 2	Pipeline	T21
c4	1 and 2	Pipeline	T21
c5	1 and 2	Pipeline	T21
ST1	1 and 2	Pipeline	*
ST2	1 and 2	Pipeline	*
ST3	1 and 2	Pipeline	*
ST4	1 and 2	Pipeline	*
ST5	1 and 2	Pipeline	*
Imported Oil	1 and 2	Tanker	T23,T4,T5,T6

*Oil from the state leases is piped directly to shore.

Table 3 -- Oilspill probability estimates for spills greater than 1,000 and 10,000 barrels resulting from UCS Lease Sale 68, from existing Federal leases, or from existing oil transportation in the Southern California area.

	Expected number of spills (mean)		Most likely number of spills (mode)		Probability of one or more spills	
	>1,000	>10,000	>1,000	>10,000	>1,000	>10,000
Sale 68 (scenario 1)	1.1	0.5	1	0	0.67	0.39
Sale 68 (scenario 2)	1.2	0.6	1	0	0.70	0.45
Sale 58 plus existing leases and imports (scenario 1)	23.2	11.8	23	11	0.99+	0.99+
Sale 68 plus existing leases and imports (scenario 2)	23.3	11.9	23	11	0.99+	0.99+
Existing leases plus imports	22.3	11.5	22	11	0.99+	0.99+



United States Department of the Interior

1792 (542)

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

Memorandum

JAN 13 1981

To: Director, Fish and Wildlife Service

From: Director, Bureau of Land Management

Subject: Joint Endangered Species Consultation for the Southern California Bight

In accordance with Section 7(c) of the Endangered Species Act, the Bureau of Land Management (BLM) and the U.S. Geological Survey (USGS) are requesting a joint regional consultation on the Outer Continental Shelf (OCS) oil and gas program in the southern California Bight. This regional consultation should consider all of the operations pertaining to oil and gas leasing and exploration in the area from offshore Point Conception south to offshore the U.S./Mexico border. In May 1978, the BLM requested a formal Section 7 consultation and received a biological opinion on a previous southern California Bight Lease Sale (Sale No. 48). Another oil and gas lease sale has been proposed for this same general region (Sale No. 68, June 1982) and we anticipate that additional sales will be proposed for this area at some time in the future. We believe that a joint regional consultation, that addresses impacts of the regional OCS oil and gas program on endangered and threatened species, will be a more efficient and economical approach than an agency-by-agency, sale-by-sale approach.

It is understood that by providing us with a regional biological opinion you will not be foreclosing on opportunities to reconsider that opinion in later phases of the program, or as future sales are proposed for this region. It is our position that additional sale proposals constitute new information and that formal consultation will be reinitiated at the appropriate time. Further, it is understood that formal consultation must be reinitiated before development and production activities begin in this region. These formal procedures will take place in addition to our ongoing informal consultations presently occurring through all phases and regions of the OCS leasing program.

We consider regional consultations far more valuable than sale specific ones. Regional biological opinions enhance our ability to assess the cumulative impacts of the OCS leasing program, identify regional data gaps and research needs, and provide us with an information base onto which our agencies can build in future consultations.

My staff has been in contact with your Office of Endangered Species regarding mutually agreeable arrangements for this consultation. Accordingly, it has been agreed that because of time, staff, and travel budget constraints, we will provide your agency with written and published material which will serve in lieu of a consultation meeting. Further, it has been agreed that receipt of this material will mark the commencement of the consultation period. The material provided includes a description of the OCS Sale No. 68 proposal, a species list, the results of the oil spill trajectory analysis conducted for Sale No. 68 and a copy of the Final Environmental Impact Statement prepared for OCS Lease No. 48. Our Washington and Pacific OCS Office staffs are prepared to provide your office with any additional material you may require, to meet with your staff as necessary, and to answer any questions your representatives may have.

If you have any questions concerning this request, please contact Ralph Ainger, Bureau of Land Management (542), Washington, D.C. 20240 (FTS) 343-6264, or Lynette Vesco, Pacific OCS Office, 1340 W. 6th Street, Los Angeles, California 90017 (FTS) 798-6745.

In order to permit maximum public review of this procedure and in accordance with the regulations for implementing the National Environmental Policy Act, (40 CFR 1502.25), it is our intention to include a copy of this request and the forthcoming biological opinion in the Draft Environmental Impact Statement being prepared for proposed OCS Lease Sale No. 68. This document is scheduled to be sent to the printer during the week of April 20, 1981. Your cooperation in helping us to meet this deadline will be appreciated.


Deputy Assistant



United States Department of the Interior

FISH AND WILDLIFE SERVICE

WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES BLM/GS-81-1

Memorandum

FEB 6 1981

To: Director, Bureau of Land Management
Director, U.S. Geological Survey

Acting
From: Director

Subject: Section 7 Consultation - Southern California Bight
OCS Lease Sale No. 68

We have received your joint request for Section 7 consultation on OCS Oil and Gas Leasing Sale No. 68 in the Southern California Bight. As we have done in the past, the consultation will focus on the leasing and exploration phases of OCS activities, but will consider the development, production, and transportation phases to the extent possible based on the limited amount of information available at this time.

Because of the complexity of the consultation, I am appointing a Section 7 consultation team to carry out the consultation process. The following representatives are hereby appointed to the consultation team: Carl Benz, Sacramento Area Office; Jack Edmundson, Office of Endangered Species (OES); Dan James, OES, and Dick Mitchell, OES.

Through discussions with your staffs, a meeting has been arranged at the Pacific OCS Office in Los Angeles for February 17 and 18, 1981. Additional correspondence concerning this matter should be directed to Jack Edmundson, OES, (FTS 235-2760).

/sgd./F. Eugene Hester

cc: Regional Director R-1
Sacramento Area Office
Ralph Ainger, BLM
Mary Ann Turner, USGS
Consultation Team Members
Carl Benz, Region 1
Jack Edmundson, OES
Dan James, OES
Dick Mitchell, OES
Directorate Reading File
DD Chron
AFA Reading File
FWS/OES:JEdmundson:mbn - 235-2760
Draft - 1/29/81 Final - 2/3/81

Attendance on February 17, 1981
Section 7 Consultation
Southern California OCS

Gordon Reetz	BLM	FTS 798-7121
John Lane	BLM	FTS 798-6741
Brian Balcom	BLM	FTS 798-6750
Maurice Hill	BLM	FTS 798-6755
Carl Benz	U.S. FWS Sacramento Endangered Species Office	FTS 448-2791
Jack Edmundson	FWS-Wash. Endangered Species Office	FTS 235-2760
Dan James	FWS-Wash. Endangered Species Office	FTS 235-2760
Tom Dunaway	USGS - Los Angeles	FTS 798-2846
Steve Smith	BLM	FTS 798-6744
Ralph Ainger	BLM	FTS 343-6264
Jim Lecky	NMFS	FTS 796-2518
Joan Licari	USGS	FTS 798-2846
Mary Elaine Washurst	USGS-LA	FTS 798-2846
Lynnette Vesco	BLM	FTS 798-6745
Tom Cook	BLM	FTS 798-6752



United States Department of the Interior

FISH AND WILDLIFE SERVICE

WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES BLM/GS-81-1

SEP 30 1981

Memorandum

To: Director, Bureau of Land Management

From: Chief, Office of Endangered Species

Subject: New Information Regarding the Section 7 Biological Opinion, Proposed Outer Continental Shelf Oil and Gas Leasing and Exploration in the Southern California Bight (OCS Sale No. 68)

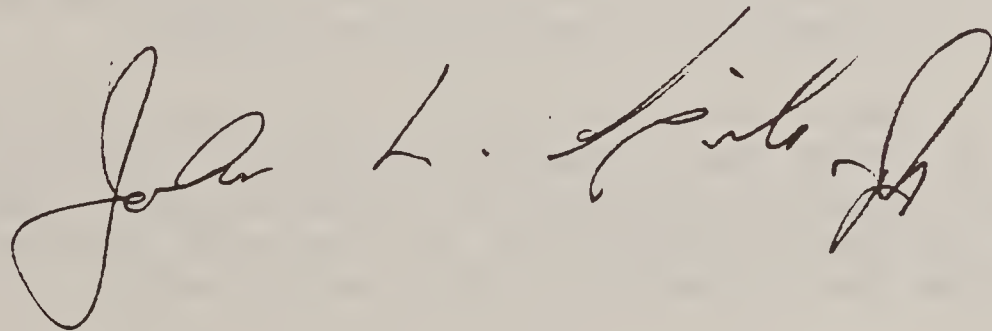
On August 31, 1981, Dan James and Jack Edmundson, of my staff met with Ralph Ainger, of your staff to discuss new information which has become available subsequent to the April 29, 1981, biological opinion for the Southern California Bight, OCS Sale No. 68.

The Pacific OCS Office has learned that sporadic sightings of southern sea otters (Enhydra lutris nereis) have been made within the proposed lease sale area. The BLM is concerned that the presence of otters may affect the aforementioned biological opinion for this species. Further, BLM has requested clarification of the biological opinion relative to the Notice of Deferral published by NOAA (46 FR 19227) regarding regulations which would prohibit hydrocarbon development within the Channel Islands National Marine Sanctuary. To date, the BLM is unsure whether the above regulations will be deferred, and thus requests the FWS to reexamine the biological opinion from the perspective that oil and gas leasing in the sanctuary is a possibility.

The presence of sea otters in the lease sale area will not change the substance of the remarks found in the species account of the biological opinion nor will it change the "is not likely to jeopardize" determination for sea otters in the Southern California Bight. At present, there is a relatively small number of otters found in the sale area, and the significance of their occurrence is not well understood. Because so few otters have been sighted thus far, oil and gas leasing and exploration activities in this area are not expected to pose significant problems for the sea otter population. However, the function of these animals relative to sea otter population dynamics (range expansion, recolonization, etc.) will be the subject of future studies. This additional information should be available when BLM and GS reinitiate consultation on the development phase of OCS Sale No. 68.

Page 16, paragraph 2, of the biological opinion states that "any activity or program authorized, funded, or carried out by a Federal agency, particularly those related to...any OCS activities within the Channel Islands Marine Sanctuary, will require Section 7 consultation." The BLM and GS provided the FWS consultation team with a draft copy of the Oilspill Risk Analysis (OSRA) for the Southern California Proposed Sale No. 68 Outer Continental Shelf Lease Area, and maps identifying specific tracts, or portions of tracts within the sanctuary which may be offered in Lease Sale No. 68. The OSRA included analysis of oilspills with a source within the sanctuary. Thus, in effect the BLM and GS have complied with the above requirement to consult on OCS activities within the sanctuary, and the FWS has considered this possibility in its biological opinion for Lease Sale No. 68. The FWS would like to emphasize its position on this matter by reiterating the Director's biological opinion which concludes that "Since existing onshore oil and gas facilities would be utilized, and the possibility of an oilspill occurring from exploration activities (emphasis added) is minimal, it is my biological opinion that the leasing and exploration activities are not likely to jeopardize the continued existence of the brown pelican." When Sale No. 68 activities reach the development/production phase in the future, the BLM and GS must reinitiate Section 7 consultation, and the FWS will reexamine OCS activities, including those within the sanctuary, regarding the possible impacts of oil and gas development on listed species.

The FWS would like to applaud the BLM for its diligence in continuing consultation beyond the issuance of the biological opinion for Sale No. 68, and encourages you to continue in this spirit of cooperation for the purpose of early identification and resolution of potential problems.

A handwritten signature in cursive script, reading "John L. Smith". The signature is written in dark ink and is positioned in the lower half of the page.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Washington, D.C. 20235

MAY 8 1981

F/MM2:CK
RECEIVED

Mr. Edward L. Hastey
Acting Director
Bureau of Land Management
Department of the Interior
Washington, D.C. 20240

MAY 8 1981

OFFICE OF THE DIRECTOR
BUREAU OF LAND MANAGEMENT

Dear Mr. Hastey:

Enclosed is the biological opinion prepared by the National Marine Fisheries Service (NMFS) pursuant to Section 7 (b) of the Endangered Species Act of 1973, as amended, concerning the impacts of oil and gas leasing and exploration on the outer continental shelf (OCS) in the area from offshore Point Conception, California south to offshore the U.S.-Mexico border (the Southern California Bight) on threatened and endangered whales and sea turtles.

The NMFS is reviewing the status of Vema hyalina, a small deep water mollusc whose known range is included in the project area. Section 7(a)(3) of the ESA requires Federal agencies to "confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed...." Although not yet formally proposed for listing as endangered, we believe that Vema hyalina should be included in this consultation to avoid future complications and delays. Therefore, we have included, with the concurrence of your Pacific OCS office, the results of our discussions and investigations on the impacts of oil and gas leasing and exploration on V. hyalina in this biological opinion.

We have determined from the available information that leasing and exploration of the OCS in the Southern California Bight Region is not likely to jeopardize the continued existence of any threatened or endangered whale or sea turtle. We also have concluded that the continued existence of V. hyalina is not likely to be jeopardized by the proposed activity.

The NMFS is concerned about the potential adverse impacts on gray and right whales found off the west coast of the United States, Canada, and Mexico from cumulative OCS activities both existing and planned. Addressing the issue of cumulative effects of OCS activities will enable the concerned agencies to resolve potential conflicts between endangered species and OCS activities before the issue of jeopardy is raised.

Consultation must be reinitiated if there are subsequent modifications of the proposed action or if new information reveals impacts of the identified activity that may affect listed species, or if a new species is listed that may



be affected by the proposed activity. Consultation also must be reinitiated before development and production activities occur on tracts in the Southern California Bight that were not considered in the Biological Opinion NMFS rendered on September 25, 1979.

I look forward to continued cooperation in future consultations.

Sincerely yours,

A handwritten signature in cursive script, reading "William H. Stevenson".

for Terry L. Leitzell
Assistant Administrator
for Fisheries

Enclosure

Endangered Species Act

Section 7 Consultation - Biological Opinion

AGENCIES: Bureau of Land Management and U.S. Geological Survey

ACTIVITY CONSIDERED DURING CONSULTATION: Operations pertaining to oil and gas leasing and exploration in the area offshore from Point Conception, California south to the U.S./Mexico border.

CONSULTATION CONDUCTED BY: National Marine Fisheries Service

BACKGROUND: In a letter dated January 16, 1981, the Bureau of Land Management (BLM) requested, on behalf of the BLM and the U.S. Geological Survey (USGS), initiation of formal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended (ESA), to consider impacts on threatened and endangered species from all operations pertaining to oil and gas leasing and exploration on the Outer Continental Shelf (OCS) in the Southern California Bight.

This area includes approximately 6.6 million hectares offshore from Point Conception, California south to the U.S./Mexico Border, from three nautical miles (nm) offshore out to a distance of 210 nm. This area has been divided into approximately 2,900 whole and partial tracts, each whole tract being approximately 9 square statute miles.

Based on geological features the Southern California Bight may be divided into three subareas. These are (1) Santa Barbara Channel bound on the north by the coast from Point Conception east to Ventura and on the south by the Northern

Channel Islands; (2) the inner bank area containing the area east of southeast of Anacapa Island, the Santa Monica Basin, and San Pedro Bay out to Santa Catalina Island; and (3) the outer bank area, which follows the Santa Rosa-Cortez Ridge, contains Santa Rosa Ridge, San Nicolas Basin, Dall Bank, Southeast Tanner Bank, and Santo Tomas Knoll.

From 1966 to 1979, four lease sales were held in the Southern California Bight. One hundred and eighty-two leases were sold, 96 of which were active as of March 1981 (USGS, 1981). The distribution of the active leases is as follows: 82 in the Santa Barbara Channel, 6 on the inner bank, and 8 on the outer bank (BLM, 1980A). Through February 1981, 185 exploratory wells had been drilled in the Southern California Bight (USGS, 1981). The majority of these wells were drilled in the Santa Barbara Channel where 11 oil fields have been identified. Only two fields have been identified in the inner bank area, specifically in the San Pedro Bay, and no economically recoverable oil and gas deposits have been discovered in the outer bank area. In the most recent call nomination (proposed Lease Sale Number 68) the oil industry expressed an interest in exploring an additional 609 tracts.

If hydrocarbons are present in economically recoverable quantities, the lessee(s) must submit a proposed development and production plan, and an accompanying Environmental Report to the USGS for approval before development commences. In addition, compliance with the OCS Lands Act Amendments of 1978 requires that at least one development and production plan EIS be prepared by the Department of Interior for any given OCS area or region (as defined by the Secretary of Interior). An EIS was prepared by the Department of Interior on the development of oil and gas resources in the Santa Barbara Channel in 1976: subsequent comprehensive Environmental Assessment/Environmental Impact Report documents have been completed in several other areas. These documents will be

reviewed by NMFS on a routine basis and will be scrutinized in future consultations which will address impacts of the development phase on threatened and endangered species.

The development phase includes the placement of platforms, drilling production wells, treating oil at either offshore or onshore separating facilities, and transporting natural gas and treated crude oil from the project area. This phase has been initiated in the Southern California Bight. There are currently 12 platforms installed and four platforms proposed for installation in the Southern California Bight. The USGS and National Marine Fisheries Service (NMFS) consulted on these activities and a biological opinion concluding no likelihood of jeopardy to the continued existence of the threatened or endangered whales and sea turtles was rendered on September 25, 1979.

In their January 16, 1981 request for consultation BLM and USGS indicated that a regional approach to consideration of leasing and exploration would be more efficient and economical than the sale-by-sale approach used previously. We agree that review of long term projects in an ecologically definable region such as the Southern California Bight, may be accomplished most efficiently by a regional approach. Such a regional or "aggregate" consultation, as described in 50 CFR Section 402.04(a)(3); 43FR871, is the best method to comply with the consultation requirements of Section 7(a)(2) of the ESA because the potential impacts of OCS leasing and exploration activities from individual lease sales within a given region will be similar. Furthermore, a regional consultation will identify potential problems and additional information needs at an early stage in the regional OCS program.

This consultation was conducted through review of published and unpublished data provided by BLM, USGS, and NMFS; a meeting between NMFS, U.S. Fish and Wildlife Service, BLM, and USGS held on February 17 and 18, 1981 at BLM's Pacific

OCS office for the purpose of exchanging information and clarifying issues; and a number of phone calls to BLM and USGS for further clarification and additional information. A list of references utilized in preparation of this opinion is included.

Although the entire range of OCS activities was considered in the consultation process, this Biological Opinion addresses only the OCS leasing and exploration activities in the Southern California Bight. When available, NMFS will review future lease sale and exploration plans as well as the results of BLM-funded and other investigations into the impacts of oil and gas development to determine whether consultation pursuant to Section 7 of the ESA for the Southern California Bight OCS oil and gas lease and exploration program must be reinitiated. Further, when the development and production phases are reached and as information on the specific impact of the activities, including the cumulative impact of the program, becomes available formal consultation will be reinitiated.

Proposed Activity

BLM's current 5-year OCS leasing schedule, which ends in February 1985, identifies three lease sales (numbers 68, 73, and 80) in California and up to four reoffering sales which may include tracts in the Southern California Bight that were offered but not sold in sales previous to the reoffering sale. BLM has proposed modifying this schedule by extending it through June 1986 and adding 2 more lease sales (Numbers 91 and 96) and 1 more reoffering sale. BLM is unable to predict the number of additional sales that may be required to allow for complete exploration of the Southern California Bight.

Prior to leasing, geophysical exploration is done in order to determine the hydrocarbon potential of an area. This involves towing an acoustical device, which generates a shock wave, and an array of recorders. The manner in which the

shock waves are reflected or refracted toward the recorders is indicative of bottom geology.

There were 32 such surveys conducted in the Southern California Bight in 1978, 13 in 1979, and 11 in 1980. Through the end of March 5 permits had been issued for geophysical exploration of the Southern California Bight in 1981. USGS does not expect an increase in the rate of geophysical exploration because of the availability of vessels and equipment. We anticipate no adverse impacts on listed species from this level of geophysical exploration.

The leasing of tracts initiates a sequence of events which may impact endangered species. After a lease has been issued, the lessee will undertake certain environmental studies for the purpose of developing an exploration plan and environmental report and for compliance with OCS orders, Notices to Lessees, and Sales specific stipulations. These may include studies to provide descriptions of the air quality, sea state, and flora and fauna in the tract area that may be disturbed by exploration activities. Geological studies may involve bottom drag sampling or shallow coring. Biological studies may employ certain high resolution geophysical instrumentation, i.e., fathometers to determine water depth, water column bubble detectors to detect marine life and side-scan sonar to map sea bottom irregularities. These studies use accepted sampling techniques which are passive in nature and localized in range. No impacts on endangered species are anticipated from these studies.

Drilling of exploratory wells is permitted after exploration plans and environmental reports are approved by USGS. Mobile drilling rigs that will be utilized to drill these wells include temporary jack-up rigs, exploratory drilling ships, and semi-submersible drilling platforms. The type of platform utilized at a specific site depends on parameters such as water depth, bottom topography, and availability of drill ships.

From 1976 through 1980 the mean rate of exploration in the Southern California Bight was 16 wells per year. The peak rate of exploration was 29 wells in 1977. The number and location of platforms required to complete exploration of the Southern California Bight are unknown. Exploratory wells are still being drilled for the purpose of deliniating the boundaries of discovered deposits. The rate of exploration could rise as high as 30 wells per year, but is expected to remain somewhat lower because of availability of exploratory vessel time. The rate of exploration appears to oscillate as a function of lease sale dates, with number of wells drilled peaking in the third year after the sale. After three years, the number of exploratory wells drilled declines as leases expire. The 5-year leasing schedule could have the effect of expanding the peaks into a 3 to 5-year plateau. The potential impacts of exploratory drilling are discussed below.

Status of Species Considered in this Opinion

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Gray Whale	(<u>Eschrichtius robustus</u>)	Endangered
Right Whale	(<u>Eubalaena glacialis</u>)	Endangered
Blue Whale	(<u>Balaenoptera musculus</u>)	Endangered
Fin Whale	(<u>B. physalus</u>)	Endangered
Sei Whale	(<u>B. borealis</u>)	Endangered
Humpback Whale	(<u>Megaptera novaeangliae</u>)	Endangered
Sperm Whale	(<u>Physeter catodon</u>)	Endangered
Green Sea turtle	(<u>Chelonia mydas</u>)	Endangered
Leatherback Sea Turtle	(<u>Dermochelys coriacea</u>)	Endangered
Pacific Ridley Sea Turtle	(<u>Lepidochelys olivacea</u>)	Endangered
Loggerhead Sea Turtle	(<u>Caretta caretta</u>)	Threatened
Monoplacophoran	(<u>Vema hyalina</u>)	Under Review

All of the cetaceans listed exhibit similar north-south migratory patterns, utilizing high latitude cold water feeding grounds in summer and low latitude warm water calving and breeding grounds in winter. Although the limits of the

feeding grounds, breeding and calving grounds, and migratory paths vary from species to species, at least part of the North Pacific population of each species may be found in waters of the Southern California Bight at some point during their annual migratory cycle. Sea turtles rarely occur in the project area. They probably are represented by individuals that have migrated to the northern limits of their ranges.

The gray whale is seasonally the most abundant whale in the project area. Because of its coastal migratory path between its northern feeding grounds and its calving grounds in the lagoons of Baja California, Mexico, essentially the entire gray whale population migrates through the project area twice annually. The southern migration through the project area occurs from November to January. Some immature gray whales may remain in the project area during winter loafing and may be feeding in the kelp beds along the coast and around the Channel Islands (Wellington and Shane, 1978). The return migration through the project area occurs from February through May. During the three year BLM Cetacean Survey only one sighting was made during the summer months (Dohl et al., 1978) indicating that gray whales do not reside in the Southern California Bight during the summer in significant numbers. The eastern North Pacific stock is estimated at 15,000 whales (Rugh, 1979). Because it is the most abundant large whale in the project area the gray whale is the most likely to be impacted by OCS activities.

The most depleted stock considered in this consultation is the North Pacific population of the right whale. It is estimated to number between 100 and 200 individuals (Wada, 1972). The distribution of this species is poorly known. Its summer feeding grounds are located in the Gulf of Alaska, along the Aleutian Islands, and in the Bering Sea. Practically nothing is known about its winter distribution. Other populations of this species are known to utilize coastal

bays as winter calving grounds. No calving grounds have been identified for the North Pacific population. This is somewhat surprising, considering the interest the Yankee whalers had in this species and the amount of whaling that has occurred along the North Pacific coast. In recent years right whales have been sighted off Baja California, suggesting that this population, like most baleen whales, probably exhibits a seasonal shift to the south in the winter. On April 17, 1981 a right whale was sighted in the Santa Barbara Channel (Woodhouse, personal communication). This is the first reported sighting of a right whale in the Southern California Bight since 1956 (Gilmore, 1956). Although no right whales were sighted during the BLM funded 3 year marine mammal survey of the Southern California Bight (Dohl et al., 1978), this most recent sighting confirms that right whales occasionally can be found in the region.

Part of the North Pacific population of blue whales, which numbers approximately 1,700 (DOC, 1978), migrates through the project area from May through July on the way to its summer feeding grounds and again from September to February during migration to its wintering grounds in the warm waters off southern Baja California. Even when migrating the blue whale probably occurs offshore most of the time. Blue whales can be found in the project area from June through December. Their distribution is known to be as close as 15 nm to the mainland coast in the Santa Barbara Channel, north of Santa Rosa Island, and generally along the Santa Rose-Cortez Ridge to Tanner and Cortez Banks (Dohl et al., 1978). In 1980 a blue whale was brought into Los Angeles Harbor draped across the bow of a tanker. This whale/vessel conflict was documented by the Los Angeles County Museum of Natural History (Accession Number A800706).

The North Pacific population of fin whales numbers about 17,000 and is widely distributed (DOC, 1978). The migratory pattern of this population is least well defined of all the large whales. Fin whales may be found in the

project area year round, with greatest abundance from June through September (Dohl et al., 1978).

Sei whales are estimated to number about 9,000 in the North Pacific (DOC, 1978). They have been sighted in the Southern California Bight. They appear to be a more offshore species associated with the deep waters of the continental slope. The only sightings made during the three year BLM survey occurred in September 1975, when two groups totaling five whales were seen west of Tanner-Cortez Banks (Dohl et al., 1978). Apparently there is a southerly and offshore shift in their distribution during winter.

The humpback whale is one of the most depleted of the whales. The North Pacific population is approximately 1,000 whales (DOC, in press). A portion of this population migrates from its summer grounds in Alaska south to its calving and breeding grounds off the west coast of Baja California, where it spends the winter months. Their summer and winter ranges appear to overlap in the Southern California Bight and humpbacks may be found in the in the project area during portions of all seasons. Their peak abundance occurs in summer and fall (Dohl et al., 1978). During a cetacean capture cruise for Seaworld, two humpback whales were observed feeding on anchovies over the Santa Rosa Ridge. The importance of this area to the food resources of the humpback whale is unknown.

The sperm whale is the most abundant large whale in the North Pacific Ocean. Its population is about 300,000 and is widely distributed (DOC 1978). This pelagic species usually is not associated with near shore waters. The migration path of the sperm whale generally passes seaward of the Southern California Bight; sightings of this species in the project area are rare (Dohl et al., 1978).

The four species of sea turtles included in this consultation generally are distributed to the south of the project area. Records of stranded green and

leatherback sea turtles as far north as British Columbia, Canada and Pacific ridley sea turtles as far north as Humboldt County, California (Stebbins, 1966) indicate that occasional transients may wander through the project area. Stebbins (1966) lists the northern limit of the range of loggerhead sea turtle as southern California.

The NMFS is considering a proposal to list Vema hyalina (Mollusca: Monoplacophora) a small limpet-like mollusc, as an endangered species. The 1979 amendments to the ESA require Federal agencies to confer with the NMFS on any agency action which may jeopardize populations of proposed species. We believe that, although not yet formally proposed for listing, V. hyalina should be included in this consultation, in order to avoid future complications and or delays in the OCS program in the Southern California Bight. Therefore NMFS requested BLM and USGS to include V. hyalina in their request for consultation. BLM and USGS complied with this request and the results of our discussions and investigations are incorporated in this biological opinion.

V. hyalina is a recently discovered species in the Southern California Bight. It is a living representative of a class of molluscs thought to have gone extinct in the Devonian (300 million years ago). There are no estimates of its abundance. The known range is between the collection sites at 32° 25' 48" N, 119° 13' 30" W (McLean, 1979) and 33° 04' N, 119° 34' W (Lowenstam, 1978) at depths of between 174 meters (McLean, 1979) and 403 meters (Lowenstam, 1978). All specimens recovered from these sites were living on phosphorite nodules. Their existence may depend on the availability of hard substrates. Although no information is available on their ability to survive on the adjacent soft sandy bottoms, some researchers believe V. hyalina should be able to cope with this type of substrate. The absence of this species in bottom samples collected at other nearby locations could be attributed to the general lack of suitable

substrate, the extreme fragility of the organism, and problems associated with raising them from depth intact, or the insufficient scrutiny of those sorting through the samples. The largest specimen collected to date is 2.3 mm in length (McLean, 1979).

Potential Impacts

Geraci and St. Aubin (1980) discussed potential impacts of all phases of OCS oil development on marine mammals. Potential impacts associated with exploration include oil pollution resulting from well blow outs or fractured formations; noise generated by geophysical exploration, drilling, and increased vessel traffic; and conflicts between vessels and whales. We believe sea turtles would be subject to the same impacts.

Potential effects of oil pollution on endangered species include fouling of the feeding mechanism (particularly baleen plates), disruption of respiratory function, ingestion of oil with unknown effects on physiology, reduction of food supplies through contamination or alteration of habitat, irritation of skin and eyes, and modification of migratory routes to avoid contamination by oil. Excessive noise could be responsible for changes in migration routes, abandonment of feeding areas, and stress which could affect reproductive potentials. Increased vessel traffic possibly will result in more vessel and whale or sea turtle collisions. These are almost always injurious and usually fatal to the animal involved. We are unable to predict the number of collisions that would occur and therefore their impacts on the populations.

BLM has funded several studies to investigate these impacts (BLM, 1981B) including studies of "Effects of Oil on Marine Mammals", "Effects of Oil on the Feeding Mechanism of the Bowhead Whale", "Effects of Sound on Marine Mammals", and "Gray Whale Tagging Studies". When these studies are completed we shall have

a better understanding of the effects of these impacts. We believe that the information obtained from these and other studies is essential for the realistic evaluation of the impacts of the OCS leasing program on endangered species.

The gray whale and the right whale are the species of greatest concern to us in the Southern California Bight. Because of its restricted breeding grounds and its migration corridor, which results in virtually the entire population migrating through the Southern California Bight twice each year, the gray whale is the species most likely to be impacted. Moreover, by 1985, there will have been 15 OCS lease sales and up to 5 reoffering sales within the U.S. portion of the gray whale's range. In addition, an undetermined amount of oil exploration and development by Canada and Mexico within their respective jurisdictions along the gray whale's migration route will occur. Abandonment of either its traditional migration route, breeding grounds, or preferred feeding grounds in the Bering and Chukchi Seas could jeopardize the continued existence of the gray whale. Although we are unable to identify the threshold of OCS development that may cause gray whales to abandon preferred habitat, we are concerned about the increasing amount of OCS activity off the west coast and believe that the time has come to consider the potential threats posed by cumulative OCS activities in this region. We believe that addressing the issue of cumulative impacts at this time will enable the agencies involved in this activity to resolve potential conflicts between OCS activities and endangered species before they become severe enough to result in the likelihood of jeopardizing the continued existence of a listed species. Studies such as those cited above may provide information to aid in addressing this concern.

If impacted, the right whale is the species most likely to suffer extinction. Its population is quite small and recruitment probably is no more than a few animals each year. Any impact resulting in the death of even a few

animals essentially would negate a years' reproductive effort and further reduce the probability of the survival of this species. As stated above, there has been only one sighting (April 17, 1981) of a right whale in the Southern California Bight in 25 years. Because of the rarity of its occurrence in the Southern California Bight and its small size, the probability of this population being impacted by activities associated with exploration of the OCS is low.

The other endangered whales considered in this consultation (blue, fin, sei, humpback, and sperm) consist of at least two populations (eastern Pacific and western Pacific) and generally are more pelagic in distribution than the gray whale. Impacts on these species from leasing and exploration in the Southern California Bight may affect only a few individuals of a species and are not likely to jeopardize the continued existence of these species.

The four species of sea turtles probably will not be significantly affected by this leasing and exploration. Only occasional individuals at the extreme northern limits of their ranges are found in the Southern California Bight. Impacts on these individuals are not likely to affect the populations as a whole, and therefore, are not likely to jeopardize the continued existence of any of the species.

The greatest potential threat to V. hyalina is probably from sedimentation of discharged drilling muds and cuttings. Houghton et al. (1981) stated that impacts on benthic organisms from discharged muds and cuttings are inversely related to the hydrodynamic energy level and depth of the water column. Since the known distribution of V. hyalina is in a high energy area relative to the rest of the southern California Bight, and in water deeper than 174 meters, we expect V. hyalina will experience little or no increase in current rates of sedimentation.

Specific Concerns for Activities of the Pre-Exploration and Exploration Phases Are Given Below

1. Pre-exploration phase

Prior to exploration of a tract a lessee must comply with the OCS orders, Notices to Lessees, and sale specific stipulations. This includes conducting geophysical surveys to insure proposed drilling sites are stable and environment surveys to characterize the area which may be altered by exploratory drilling.

At this time we are unable to adequately assess the impacts of geophysical exploration on whales and sea turtles. The shock waves generated by acoustical devices used in geophysical exploration probably are not injurious to marine mammals (Geraci and St. Aubin, 1980) or sea turtles. Increased levels of noise may reach a threshold which could cause a shift in the migration route of the gray whale. Current levels of noise appear to be below any such threshold and USGS anticipates no large increase in levels of geophysical exploration due to the availability of vessels and equipment. Therefore, we believe gray whales are not likely to be adversely impacted by this activity. A recommendation is made below to continue monitoring the migration of gray whales to insure that gray whales are not being adversely impacted by this activity.

The environmental studies conducted during this stage probably will not affect whales or sea turtles. Bottom and core sampling techniques used in the outer bank area could result in collection of V. hyalina, which could have an adverse effect if the population is as small and localized as some researchers believe.

2. Exploration phase

The type and location of exploratory platforms are not known. Information regarding the location and time span required for drilling each well will be included in exploration plans submitted to USGS. These plans and the

accompanying environmental reports will be reviewed by the NMFS to determine if additional Section 7 consultations are required.

Noise resulting from drilling and support vessel traffic may alter gray whale behavior and migration. An accidental oil spill could damage the feeding mechanism, impair vision, disrupt respiratory and digestive systems, and cause other effects as discussed above. Increased sedimentation resulting from drilling exploratory wells may impact V. hyalina. At present, insufficient information exists to determine the magnitude of these effects, if any. Research being funded by BLM may provide information that will enable us to determine the nature and extent these types of impacts on threatened and endangered species.

Conclusions:

Based on the facts that the North Pacific populations of the blue, fin, sei, humpback, and sperm whales are widely distributed, generally are thought to consist of at least two stocks (eastern Pacific and western Pacific), and utilize broad migration corridors, NMFS concludes that leasing and activities associated with exploration are not likely to jeopardize the continued existence of these species. The NMFS also concludes that these activities are unlikely to jeopardize the continued existence of the listed sea turtles because they generally are distributed in warm tropical or subtropical waters. Individuals encountered in the cold temperate waters of the Southern California Bight probably are expatriates at the extreme northern limits of their ranges.

We believe exploration of the Southern California Bight for oil and gas deposits is not likely to jeopardize the continued existence of the gray whale because the probability of severe adverse impacts to a large portion of the population is very low. In view of the relatively restricted migration pattern of gray whales, the poor understanding of the gray whale's response to noise

generated by OCS exploration and development, the general lack of knowledge concerning the effects of spilled oil on cetaceans, and the extensive OCS development that is scheduled to take place within the range of the gray whale in the next five years, NMFS is concerned that the cumulative effects of these activities may have significant adverse effects on the gray whale. The NMFS believes that Section 7 of the ESA requires consideration of the cumulative effects of an action upon listed species and their critical habitat to determine whether that action will violate Section 7(a)(2).

Because of the sparse information on the gray whale and relatively short history of OCS activities in the Southern California Bight and off the coasts of Alaska, Canada, and Mexico, we are unable to identify a threshold of OCS activities that would result in significant impacts to the gray whale. Nevertheless, we believe that all involved agencies must consider cumulative effects from all OCS activities, including those of Canada and Mexico to insure that collectively they are not likely to jeopardize the continued existence of the gray whale.

The North Pacific population of the right whale is so small that an adverse impact to a few individuals could be a severe impact to the population. However, right whales are seen so infrequently in the Southern California Bight that the proposed activities are not likely to impact even one right whale. Therefore, we have concluded that proposed activities are not likely to jeopardize the continued existence of the right whale. As discussed above NMFS believes BLM and USGS must consider the cumulative effects of all OCS activities to insure that collectively they are not likely to jeopardize the continued existence of the right whale.

The NMFS will monitor OCS activities and review new information concerning listed species for indications of cumulative impacts. The studies funded by BLM

may provide information that will help identify such impacts.

There appears to be no jeopardy to the continued existence of V. hyalina from OCS exploration because of the assumed moderate to low oil potentials in the outer bank area. There have been 7 exploratory wells drilled within the known range of this species. None of these has indicated the presence of economically recoverable reserves of oil or gas, and 26 of the 29 leases awarded in this area have expired. The industry, however, continues to express an interest in exploring this area. The rate of exploration is expected to be less enthusiastic than in the Santa Barbara Channel or inner bank area.

Recommendation:

We recommend that BLM continue their OCS studies program and maintain close coordination with NMFS and the Marine Mammal Commission in the development of studies to investigate the impacts of exploration for and development of OCS oil and gas reserves on threatened and endangered species.

We recommend that BLM continue to fund studies, such as the gray whale tagging study, which include monitoring of gray whale migrations and the behavior of gray whales in the vicinity of pre-exploration and exploration activities to insure that gray whales are not being excluded from preferred migration corridors by OCS activities.

We are not recommending implementation of a seasonal drilling restriction in the Southern California Bight, because we believe that the gray whale migration corridor in the Southern California Bight is sufficiently wide to accommodate both exploration and migration.

Exploration at the rate anticipated by USGS is not likely to add significantly to noise levels generated by the numerous commercial and pleasure vessels utilizing the Southern California Bight. For this reason we believe that

the Southern California Bight is an excellent natural laboratory in which studies of gray whale reactions to drilling vessels, acoustic devices, and other exploration related stimuli can be conducted. We recommend that BLM take advantage of this situation by funding studies to observe gray whale migrations from various drilling platforms and geophysical exploration vessels and make an effort to correlate observed behavior to acoustic profiles presented by each platform. The results of such studies may have direct application to decisions on exploring in areas more critical to gray whales such as the Bering sea, and may provide information which could be extrapolated to other species of large whales.

Finally, we recommend consultation be continued informally through the exploration phase as development information becomes available so that NMFS will be prepared to conduct consultations on the development and production phase of OCS oil and gas development.

Reinitiation of Consultation

Consultation should be reinitiated: (1) if new information reveals impacts of the identified activity or program that may affect listed species or their habitats; (2) if the proposed activities are modified; (3) or if a new species is listed that may be affected by the proposed activity or program. Consultation also should be reinitiated before development and production activities occur on the tracts included in this consultation.

Reinitiation of consultation pursuant to Section 7 of the ESA may not be necessary for all additional exploration activities. Additional lease sale plans, modifications of existing plans, or additional information should be sent to the Director, Southwest Region, National Marine Fisheries Service, for review. NMFS suggests that the agencies involved in this consultation continue to discuss

the information concerning future OCS activities so that, if needed, consultation can be reinitiated in timely manner. This in no way would preclude any involved agency from making an independent determination of the need for reinitiating consultation.

Nothing in this Biological Opinion should be construed as authorizing any takings (as defined in Section 3 of the ESA) of endangered or threatened species pursuant to Section 10(a) nor immunizing any actions from the prohibitions of Section 9(a) of the ESA.

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E. Consultation with the State Historic Preservation Officer Pursuant to the National Historic Preservation Act

As required by the National Historic Preservation Act of 1966, as amended, extensive consultation was conducted with the California Office of Historic Preservation (OHP) and the Native American Heritage Commission (NAHC) prior to and throughout the preparation of the EIS. This consultation occurred in person, by telephone and by mail. OHP consultation dates included 10/14/80, 8/7/80, and 12/28/79. NAHC consultation dates included 12/28/79, 3/12/80, 7/30/80, and 10/17/80. In addition to personal visits and fieldwork, dates of consultation with Native American communities included 12/28/79, 8/6/80, 10/24/80, 12/10/80, and 2/26/81. Concerns raised during this consultation are addressed in Sections III.C.9 and IV.C.19. Consultation will continue, as needed, during development and production activities.

F. Additional Staff Consultation

Supplemental information presented below summarizes the consultation and coordination which has taken place between specialists on a staff level as part of the scoping process.

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Catherine Robertson	California State Lands Commission 8/21/80 Vandenberg Air Force Base 8/21/80
Tye Roy	Native American Heritage Commission (NAHC) 12/28/79, 3/12/80, 7/30/80, 10/17/80 State Historic Preservation Office 10/14/80, 8/7/80, 12/28/79 Dwight Sanders State Lands Commission 10/14/80 Wayne Patterson USCG 10/17/80 Various archaeological/historical organizations 10/21/80 Gordon Cribbs CDFG 11/12/80 Santa Barbara Indian Center 12/28/79 10/24/80, 8/6/80, 2/26/81 Candelaria American Indian Council 10/24/80 Travis Hudson Santa Barbara Museum of Natural History 12/28/79 Richard Pierce Sacred Arrow Society 12/10/80

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G. Summary of Public Hearings on the DEIS

The Department of the Interior held four days of hearings on the Draft Environmental Impact Statement for Proposed Sale No. 68. Hearings were held at the Santa Barbara High School, Santa Barbara, CA on July 28th and 29th, 1981. A second set of hearings were held at the Long Beach Convention Center, Long Beach, CA on July 30th and 31st, 1981. Panelists were: 1) William E. Grant, Presiding Officer, Bureau of Land Management, Manager, Pacific Outer Continental Shelf Office, Los Angeles, CA ; 2) Reid T. Stone, U.S. Geological Survey, Regional Conservation Manager, Pacific Outer Continental Shelf Region, Los Angeles, CA; 3) Raymond Fritz, U.S. Fish and Wildlife Services, Office of Ecological Services, Washington, DC; and 4) William Van Horn, Bureau of Land Management Chief, Offshore Environmental Assessment, Washington, DC.

Seventy-four organizations and individuals submitted testimony at the Santa Barbara hearings, 56 at the Long Beach hearings. A complete transcript is available for review at the BLM Pacific Outer Continental Shelf Office, Los Angeles. Those testifying at the hearings generally represented one of five groups: the oil industry, the fishing industry, environmental groups, state and local agencies, and small business and minority groups. A few individuals also testified. Comments and concerns raised at the public hearings are summarized below.

1. The oil industry including oil companies, engineering, drilling and construction companies.

Comments: a) presented information to demonstrate industry capabilities in excess of those needed for Proposed Sale No. 68, b) felt BLM over-estimated probability, number, and effect of spills, c) expressed concern over U.S. dependence on foreign oil, d) felt oil reserve estimates in the DEIS were too low, and e) noted that environmental review is a continuing process and that site specific evaluations are performed at the time of drilling.

2. The fishing industry including fishermen, shellfish fishermen and sea farmers.

Comments: a) generally supported Proposed Sale No. 68 since they felt more fish and shellfish are found in the vicinity of pipelines and oil rigs, and b) expressed concern over U.S. dependence on foreign oil.

3. Environmental groups and individuals.

Comments: a) opposed any oil and gas usage of the Santa Barbara National Marine Sanctuary or the Adjunct to the Santa Barbara Channel Ecological Preserve, b) voiced concern for the effect of oil spills and noise pollution on marine mammals and seabirds, c) wanted BLM to consider possible translocation of sea otters to San Nicolas Island, d) felt BLM underestimated the impact of spills on the environment and over-estimated clean-up capabilities, d) wanted the BLM to consider alternative "clean" energy sources, and e) expressed concern over drilling in the highly faulted Santa Barbara Channel.

4. State and local agencies.

Comments: a) wanted more detailed analysis of every aspect that might affect them such as transportation, air quality, traffic management, and oil spill clean-up, b) expressed concern that oil spill impacts to wetlands, beaches, and endangered species were underestimated, c) wanted tracts outside Long Beach Harbor and Santa Monica Bay withdrawn, and d) expressed concern over oil spills since tourism depends on the aesthetics of an area.

5. Small businesses and minority groups including farm and dairy associations, minority business groups, and senior citizens.

Comments: a) generally favored Proposed Sale No. 68 for economic reasons.

The Pacific OCS staff considered all comments in the preparation of the FEIS. Alternatives III, IV and V were added in response to comments on the DEIS and other modifications were made where appropriate. However, due to space limitations, it was not possible to include the oral testimony or responses in the FEIS. These documents are available for review in the Pacific OCS Office upon request. A complete list of speakers at the public hearings and organizations they represent can be found in Tables VII.G-1 and VII.G-2. Many of the organizations and speakers represented at the public hearings also sent written comments to the Pacific OCS office. These comments and the responses from BLM are included in Section VII.H of the FEIS.

TABLE VII.G-1

Speakers at the Santa Barbara Hearings
on the DEIS for Proposed Sale No. 68
July 29th and 30th
(Speakers are listed in order of appearance)

Charles Brandis - Governor's Office of Planning and Research

Jim Ryerson - Coastal Commission, South Central Coast District

Al Reynolds - County of Santa Barbara, Department of Resource Management

Naomi Schwartz for Assemblyman Gary Hart

Edward A. Walker - Secretary-Treasurer, Offshore Crane and Service Co.

La Donna Kueny for the Hon. Robert Lagomarsino

Al Spaulding - Vice President & General Manager, Western Oil and Gas
Association (WOGA)

Richard Karshner - Shell Oil Co. for WOGA

Dr. Roger Schlueter - Dames and Moore, Director Marine Services Group

David Farr - Chevron U.S.A. Inc. for WOGA

Fermin Feuerborn - Secretary-Treasurer, Building and Trades Council;
Santa Barbara/San Luis Obispo

Art Maskala - Business Representative, Santa Barbara Printers Union

John F. Mangold - President, Vetco Offshore, Inc.

John Helmer - City of Santa Barbara

Evelyn Heidelberg - California Council for Environmental & Economic
Balance

Stephen Wetch for Fritz Huntsinger, Sr. - Vetco Offshore, Inc.

Elizabeth Weingand - President, Get Oil Out, Inc.

Lois Sidenberg - President, Carpinteria Valley Association

Judy McCashin - Housewife, Ventura, CA

Joan Kerns - Vice President, Get Oil Out, Inc.

J. R. Jackson, Jr. - Regulatory Affairs Manager for Exploration, Exxon Company,
U.S.A.

TABLE VII.G-1 (Continued)

Tom Wright - Environmental Geologist, Western Region, Chevron U.S.A. Inc.

Richard Williams - Save Our Shellfish

Fred Eissler - Scenic Shoreline Preservation Conference, Inc.

Charles D. Matthews - President, National Ocean Industries Association

Bruce Leavitt - Global Marine Drilling Company

Stephen B. Wetch - Product Sales Engineer, Vetco Offshore, Inc. for National Ocean Industries (NOIA) Panel

D. Michael Hughes - Executive Vice President, Oceaneering International, Inc. for National Ocean Industries (NOIA) Panel

Frank E. Reynolds - Senior Vice President, Santa Fe International Corporation

Rudy Mangu - President, California Abalone Association

Michael Braun - Director, Energy Department, California Chamber of Commerce

Harold Sullwold, Jr. - Registered Geologist and Petroleum Engineer

Earle E. Sweetland - Executive Vice President, Lompoc Valley Chamber of Commerce

Charles C. Carmichael

Walter E. Gray - President, Diverless Systems Inc. and Gray Management and Engineering

Howard A. Hogue - President, Tidewater Marine Service

Ladd Handelman - Chairman, Save Our Shellfish

George Castagnola - Fisherman, Santa Barbara, CA

Jonathan Seybold - Malibu Township Council

Pat Schewczyk - League of Women Voters, Santa Barbara

Paul Owen - Vice President, Greater Ventura Chamber of Commerce

Art Marshall - Ventura County Taxpayers Association

Lisa Le Valley

Carl Lowthorp - Ventura County Economic Development Association

TABLE VII.G-1 (Continued)

Michael David Cox - Staff Attorney, Environmental Defense Center

William Gesner - Santa Barbara, CA

Francis Sarguis - Scenic Shoreline Preservation Conference

Nancy Gribble - Sierra Club, Santa Barbara Group

John Morgan

Tom Wright - Chevron U.S.A. Inc. for American Association of Petroleum Geologists (AAPG), Past President, AAPG and Past Chairman, AAPG Environmental Geology Committee

Timothy Bristol

Larry Bickford - Member, Network Steering Committee

Tom Arneson - Governmental Affairs Manager, Santa Barbara Chamber of Commerce

John Curran - Geologist, Santa Barbara, CA

Joseph Sesto - Sesto & Company Insurance Service

Chuck Hebard - President, Santa Maria Developers Association

Robert Garing - Citizens for Adequate Energy Steering Committee

Angelo Castagnola - Angelo Castagnola Tug Service

L. F. Ivanhoe - Consulting Geologist and Geophysicist

Ray Farrell - B and C Welding

Dr. Peter Fisher - (tape recording only), Society of Exploration Geophysicists

Bob Wilkenson - Friends of the Earth

Mark McGinnes - General Counsel, Environmental Defense Center

Charles P. Slocombe - Marine Consultant

Mildred Nelson

Robert Lilley - Real Estate and Appraisals

Francis Beattie - County Supervisor, Retired

Howard D. Martin

William C. Ebbert - Ebbert's Realty

TABLE VII.G-1 (Continued)

Frederic Green - Coast Geological Society

Tom Wright - Chevron U.S.A. Inc.

Cecil Hendrickson

Craig Steiger

Jerry Lanham - International Union of Operating Engineers, Ventura Branch

TABLE VII.G-2

Speakers at the Long Beach Hearing
on the DEIS for Proposed Sale No. 68
July 30th and 31st
(Speakers are listed in order of appearance)

Gordon Smith - Vice-Chairman, Huntington Beach Environmental Board

J. B. Dodd - Standard Oil Company Senior Citizen

Mart Fink - Modomack Industries

Jackie Heather - Mayor, City of Newport Beach

Gary Dennis - President, San Diego County Rock Producers Association

Bob Cozens - Associated General Contractors, speaking as Legislative Director
of the San Diego Construction Industry Federation

Peter Ireland

Errol Lizanna - Watts Automotive Trim, Inc.

Gil Shawnee - Long Beach

Herbert Frederick - Director, Future Economic Leaders of America

Mr. and Mrs. Henry Burkes - Engineer

Don Reining - President, Southern California Rock Products

George Schweitzer - Director, Western Region National Council for Senior
Citizens, Inc.

Peter Diaz

Freida Spellman - Block Business Association of Los Angeles

Harold Mylius - Citizen and Resident

Hugh Brown - Citizen, San Clemente

Woody Eddy - Bank Vice President and Loan Manager

Meda Chamberlain - Member at Large, National Council of Negro Women

Willard Murray - Field Representative for Congressman Mervyn Dymally

Jessie Roybal - Executive Director, Candelaria American Indian Council,
Santa Barbara

TABLE VII.G-2 (Continued)

Eric Notman - Citizen, Los Angeles

Dr. John Boatwright - Coordinator for Economics, Corporate Planning Dept.,
Exxon Company, U.S.A.

Arthur Spaulding - Vice President and General Manager, Western Oil and Gas
Association

Lawrence J. Goldstein - Director of Research, Petroleum Industry Research
Foundation, Inc.

Captain W. F. Guy - U.S. Coast Guard, Retired, for WOGA

Joan Shaffran-Brandt for Congressman A. Beilenson, Los Angeles

Ed Gladish - Chairman, Energy Resource Committee, Long Beach Chamber of Commerce

Goldi Joseph - Newport Beach

W. R. Mendenhall - Citizen, Mission Viejo

Wesley Bisgaard - Member, Board of Directors, California Farm Bureau Federation

John Ford, Jr. - Marketing Manager, Solar Turbines, Inc.

Donald E. Hallinger - American Institute of Professional Geologists,
California Section

Will Sitton - State Dairy Association, Inc.

David Frank - LTD Packing Corporation

Leroy Jeffries - Marketing Consultant, Los Angeles

John P. Adams - Vice President, Development and Environmental Council,
Los Angeles Chamber of Commerce

Gregory Smith for Arthur Brown - Sierra Club, Los Angeles

Jack Sheehan - Well Log Analyst

Ross McClintock - Fluor Corporation

Tom Herbert - Chairman, Conservation Committee, Sierra Club, Angeles Chapter

Bruce Barron - Los Angeles Basin Geological Society

CAPT Donald M. Taub - Eleventh Coast Guard District, Chief Marine Safety
Division

TABLE VII.G-2 (Continued)

Don Shields - Manager-Director, Highway Carriers Association

Lucien Truehill - Executive Director, Orange County Chamber of Commerce

Alice H. Myers - Anaheim

Dr. C. Melvin Swinney - Energy Resources Manager, Southern California Edison

C. E. VanCott - California Highway Users Conference

Judy Goldman - National Conservation Chairman, National Membership of the
American Cetacean Society

T. L. Wright - Immediate Past President and Chairman, Public Affairs Committee,
Pacific Section of the American Association of Petroleum Geologists

Les Balmer - Citizen, El Segundo

Ronald G. Turner - Baker International Company

Carroll Clark - President, International Union of Petroleum & Industrial
Workers

T. L. Wright - Chevron U.S.A. Inc.

Roger Holt - Assistant City Attorney, City of Los Angeles, for Los Angeles
City Attorney Ira Reiner, Mayor Tom Bradley, City Council Members
Ziv Yaroslavsky and Marvin Brande

Dr. Peter Greene - Amigos de Bolsa Chica, Huntington Beach

H. Written Comments and BLM Responses to Comments

In addition to testimony received at public hearings, BLM solicited written comments (Federal Register, Vol. 46, No. 103, pp. 28951-2). Comments received were considered in detail during preparation of the FEIS. Alternatives III, IV and V were added in response to comments on the DEIS and other modifications were made where appropriate. A copy or summary of all written comments received is included in the FEIS followed by BLM's responses to these comments. The following public agencies, special interest groups and private individuals submitted written comments:

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33.	Exxon Company, U.S.A.	7-258
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35.	Greater Bakersfield Chamber of Commerce	7-263
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The following comments were received too late to be included in sequence.

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66.	U.S. Department of Defense, Office of the Assistant Secretary of Defense	7-311

City of Avalon
SANTA CATALINA ISLAND
P.O. BOX 707, AVALON, CAL. 90704
(213) 510-0220



MAYOR * GEORGE SCOTT
MAYOR PRO TEM * GILBERT SALDAÑA
COUNCILMAN * CAROL FAGOT
COUNCILMAN * NORM PERLUSS
COUNCILMAN * HUGH T. "Bud" SMITH
CITY MANAGER * JOHN LONGLEY
CITY CLERK * SHIRLEY DAVY

Pacific OCS Office
Page 2
August 6, 1981

Bureau of Land Management
Pacific OCS Office
Att: E.A. Manager
1340 West 6th Street Room 200
Los Angeles, Calif. 90017

Subject: OCS Lease Sale No. 68

Dear Sir:

The City of Avalon, Santa Catalina Island, appreciates the opportunity to respond to the proposed OCS lease sale and submit comments on the Draft Environmental Impact Statement (DEIS). The City wishes to direct its comments to specific environmental and economic impacts and submit recommendations regarding the preferential alternative to the proposed sale.

Avalon, located on the inner shore of Catalina Island, is identified as an area which will experience the greatest probability of a major (greater than 10,000 barrels) oil spill (reference page 4-61); has a 30% probability of a spill occurrence (page 4-84); in whose nearshore waters represent an area of maximum seasonal concentration of Southern California Bight pilot whales (page 4-78); a major flyway for migratory seabirds (page 4-78); home of the endangered Southern Bald Eagle (page 4-85); and, ninth major recreational destination in the region, behind the Los Angeles County Zoo in annual attendance. As a result of these impacts, development of OCS Lease Sale No. 68, as currently proposed, is of major concern to this community.

There is inadequate discussion in the DEIS on oil spill probability, oil spill impacts and oil spill contingency planning. Absent from the DEIS is an analysis of the direct and indirect economic impacts which would result from a major spill. These impacts include, but are not limited to, affects upon the local tourist economy and both short and long-term impacts to commercial fishing operations. Environmental consequences, although less easily quantified, should also be assessed.

Figure III C.5-5 of the DEIS lists Avalon as a major regional recreational attraction. Annual visitor attendance to the island

approaches 1,100,000 people. The DEIS's reference to tourism as an important contributor to regional economic well-being fails to emphasize either the significance that tourism has on the local island economy or the relationship between tourism and environmental quality. Comparing Avalon to other regional attractions fails to identify the dependance of this activity upon the environmental attributes that make Avalon a desirable tourist designation. While it is doubtful that attendance at Disneyland would suffer in the event of an oil spill, the impacts to this community would be significant.

The DEIS is deficient in failing to adequately identify and quantify the adverse impacts that OCS Lease Sale No. 68 can have on both regional and localized economies.

The City of Avalon supports and recommends, with reservations, the selection of Alternative 2 as the preferential course of action. This alternative recommends the deletion of specific tracts adjacent to the proposed marine preserve in the Santa Barbara Channel (Northern Channel Islands). Alternative 2 proposes the establishment of an additional 3-mile buffer zone around these sensitive habitat areas so as to increase response time and diminish potential adverse environmental impacts.

That alternative, however, neglects to consider other areas within the proposed lease sale of similar and equally warranted marine preserve designation. Figure III C. 5-4 of the DEIS indicates, among other areas, Santa Catalina Island as the site of a proposed underwater park. The City, therefore, wishes to petition BLM that an additional buffer zone, similar to that discussed in Alternative 2, be established around these future marine recreational areas.

The DEIS fails to discuss buffer zones in excess of 3 miles. Discussion of this zone on page 4-92 represents an incomplete and inadequate discussion of the benefits associated with larger buffer zones. The DEIS should be augmented to include a detailed analysis of expanding these zones outward.

Sincerely,

George Scott
George Scott, Mayor

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Pacific OCS Office
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August 6, 1981

cc: Michael Fisher, California Coastal Commission
Governor's Office of Planning and Research
Supervisor Dean Dana
U.S. Senator S. I. Hayakawa
U.S. Senator Alan Cranston
U.S. Representative Glenn Anderson
State Senator Robert E. Beverly

Responses to CITY OF AVALON

- 1.1 Comment noted.
- 1.2 The EIS has been revised to reflect the role of Avalon as a recreational destination.
- 1.3 Section IV.C of the EIS contains information on the impact of oil spills on biological and human resources.
- 1.4 The EIS has been revised as appropriate.
- 1.5 The U.S. Department of the Interior does not use traditional cost-benefit analyses in OCS lease sales. Local economic impacts cannot be quantified in the traditional sense, since the location, magnitude and character of any potential population influx is not predictable until a resource has been found and production estimated.
- 1.6 Comment noted.
- 1.7 BLM has considered this recommendation and decided that there is not sufficient justification for including in the EIS an alternative to delete tracts around the areas indicated. However, as has occurred previously, the Secretary of the Interior may choose to delete any combination of tracts he deems appropriate.
- 1.8 BLM has considered buffer zones greater than 3 nautical miles and has included in the EIS Alternative 2 which, if adopted, would delete tracts within 6 nautical miles of the Northern Channel Islands.



CITY OF HUNTINGTON BEACH

P.O. BOX 190 DEPARTMENT OF DEVELOPMENT SERVICES CALIFORNIA 92648
BUILDING DIVISION (714) 536-5241 PLANNING DIVISION (714) 536-5271

Pacific OCS Office (BLM)

-2-

August 10, 1981

August 10, 1981

Pacific OCS Office (BLM)
1340 West 6th Street, Room 200
Los Angeles, California 90017

Dear Sir or Madam:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for Lease-Sale #68. We are submitting the following comments regarding the DEIS for your consideration:

P.4-27, 5th Paragraph: The DEIS should be more explicit about the size of the bases and the kinds of facilities that would be located on such bases. If possible, the DEIS should note specific potential sites for such bases.] 2.1

The DEIS does not adequately address two environmentally important areas in Huntington Beach: the Santa Ana River mouth area and the Least Tern Nesting Sanctuary on Huntington State Beach. These areas should be afforded high priority for protection in the case of a spill because of their importance to the feeding, breeding and nesting of endangered species. Company and co-op spill plans should recognize the importance of these areas. Perhaps spill plans should also include provisions for restricting certain clean-up operations near the nesting sanctuary (for example, by prohibiting large earth-moving machinery) in case of a spill during breeding season if such operations will seriously disrupt the breeding behavior of this rare species.] 2.2

Table IV - C:7-2: Include Santa Ana River mouth and Least Tern Sanctuary.] 2.3

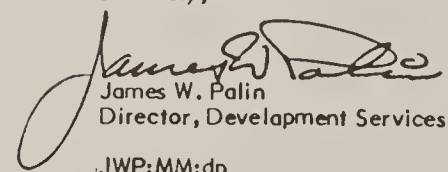
P. 4-88: This section recognizes the need to preserve estuaries and related sensitive areas. For the case where a large spill threatens more than one of these and the available booms and related equipment are inadequate to protect all such areas, has a regional priority of the sensitive areas been established for assigning the available protection equipment?] 2.4

P. 4-118: The Southern California Edison Company has a power plant in Huntington Beach which draws cooling water in an area susceptible to spills from the proposed Lease-Sale area.] 2.5

P. 1-42: Oil Spill Contingency Planning — This section should be more detailed; include information on available equipment, specific requirements for spill plans and evaluate preparedness to respond to large-scale spills. Some discussion of the assumed roles of the private sector and of various levels of government in spill planning should be included. We have enclosed a draft report on all spill contingency planning in this area which may be helpful to you in this discussion. Also, the DEIS should evaluate whether the cumulative effect of offshore activities will eventually strain the resources of the federal government and the industry to plan for oil spills, to train personnel for spill response and to monitor operations to ensure they are being conducted in a manner which minimizes all spill potential.] 2.6

If you have any questions about these comments, please contact Michael Multari at (714) 536-5271.

Sincerely,


James W. Palin
Director, Development Services
JWP:MM:dp

next page, please

7-88

Responses to CITY OF HUNTINGTON BEACH

- 2.1 The same paragraph does describe the bases: "These support bases could be constructed to store pipes, equipment and other materials. Each of the above four support bases could occupy approximately 6 hectares (15 acres)." The location of these sites is dependent on available acreage, and local and State land use restrictions.
- 2.2 The EIS has been revised as suggested. Regional priorities are under consideration by the oil and gas industry. See response 2.4.
- 2.3 Table IV.C.7-2 has been revised as suggested.
- 2.4 Regional priorities are under consideration by the oil and gas industry. For example, refer to:
- Lindstedt-Siva, June. 1977. Oil Spill Response Planning for Biologically Sensitive Areas in Southern California: Point Dume to the Mexican Border. Atlantic Richfield Company, Los Angeles, 96 p.
- 2.5 The SCE power plant at Huntington Beach has been added to the list of potentially affected plants. As noted, the impact may occur from oil spills in the vicinity of cooling water intakes.
- 2.6 Section IV.A.1 contains information on oil spill clean-up and containment. Further information has been added when feasible. Appendix H contains a list of equipment in the Proposed OCS Lease Sale No. 68 area.



August 13, 1981

E. A. Manager
Pacific OCS Office, Bureau of Land Management
1340 West 6th Street, Room 200
Los Angeles, CA. 90017

Gentlemen:

On June 8, 1981, the City of Laguna Beach received a copy of the draft Environmental Impact Statement (DEIS) for the proposed OCS Lease Sale No. 68. We have reviewed the document and offer the following comments with the anticipation of them being considered and incorporated within the Final EIS.

- 1) The maps presented within the DEIS are too general and are not specific to off-shore constraints. 3.1
- 2) The data contained within the geological Hazards Map is insufficient. The Map fails to indicate faults which are located off the coast of Laguna Beach. 3.2
- 3) There are several seepage wells existing off the coast of Laguna Beach. These seepage wells need further exploration and an environmental review, in order to determine the impacts of drilling within this area. 3.3
- 4) For the past 12 years, the Laguna Beach City Council and its residents have consistently opposed all types of off-shore drilling. In continuance of this stand, the City opposes the proposed OCS Lease Sale No. 68. 3.4
- 5) Presently, the Laguna Beach coast possesses a pristine appearance, with ecologically sensitive shores, containing several natural rock outcroppings. It is the City's position that this pristine appearance should be retained. Additionally, the City believes that the proposed OCS Sale No. 68 will be visually detrimental to the community (as supported by Figure IV.C.20-1 Visual Impacts of Oil Platforms, Page 4-128 of the DEIS). Complete review of actual impacts and illustrations should be within this EIS to be an adequate environmental document. 3.5
- 6) The Pacific Ocean, off the coast of Laguna Beach attracts many boating/sailing enthusiasts and general recreationalists yearly. It is the City's belief that the placement of oil platforms off this portion of the coast will impede the free flow usage of this section of the Pacific Ocean.

E. A. Manager
Pacific OCS Office
Bureau of Land Management

-2-

August 13, 1981

- 7) The DEIS should evaluate the potential effect upon the tourist industry in Laguna Beach, should visual impacts occur off the coast. 3.6
- 8) Lastly, the DEIS should environmentally evaluate the current gasoline leakage on the beachfront at Pearl Street, to ascertain the potential environmental damage that could occur should oil spillage be combined with gasoline. This recent spillage has discolored the beach sand and led to closure of the beach for fire and water pollution reasons. 3.7

We hope the City of Laguna Beach's concerns will be considered in the Final EIS for OCS No. 68. Please keep us notified as to any actions or meetings which may affect the Laguna Beach coastline.

Thank you for your time.

Sincerely,

Ronald L. Smith
Ronald L. Smith, Director
Department of Community Development

mo'h:jr

Responses to CITY OF LAGUNA BEACH

- 3.1 The maps were revised as appropriate.
- 3.2 The data contained within the Geological Hazards Map is referenced in the lower left corner of the map. The type, areal extent, and, where applicable, active status for several types of hazards in the entire Southern California borderland are shown. The map does indicate shallow fault traces offshore Laguna Beach and is accurate within those references cited and the scale of the map.
- 3.3 Oil and gas seeps are classified as water column anomalies and are included on Shallow Oil and Gas Visual, Volume II of the Proposed Sale No. 68 EIS. These anomalies may reflect petrogenic hydrocarbons or biologic hydrocarbons (methane gas). The size and type of the indicated seeps cannot be determined at this time due to insufficient data. The information on water column anomalies mapped on the referenced visuals was collected by USGS during a number of geophysical field cruises and does not necessarily represent all anomalies as the entire area was not surveyed.
- Geophysical surveys are conducted by an operator prior to exploration and development of a tract to determine geohazards which may affect drilling activity. Exploration and development is designed to minimize hazards to the environment (30 CFR 250).
- 3.4 Comment noted. The EIS has been revised as appropriate. In addition, see POCS Technical Paper No. 81-5.
- 3.5 Comment noted.
- 3.6 The EIS has been revised as appropriate.
- 3.7 The probability of an onshore gasoline spill or leak and an offshore oil spill occurring at the same time and affecting the same location is so remote that we have not addressed it in the EIS. However, if this situation did occur, impacts could be slightly greater.



CITY OF OXNARD CALIFORNIA

August 7, 1981

PLANNING DEPARTMENT
GENE L. MOSFORD, DIRECTOR
305 WEST THIRD STREET
OXNARD, CALIFORNIA 93030
PHONE 406-4311 EXT. 230

Environmental Assessment Manager
Pacific OCS Office
Bureau of Land Management
1340 West Sixth Street, Room 200
Los Angeles, California 90017

Re: Draft Environmental Impact Statement: OCS Sale No. 68

Dear Sir:

We have completed a review of the Environmental Impact Statement (EIS) and wish to add emphasis to several conclusions that have already been stated. In addition, we would like to take this opportunity to present our need for further information.

The first conclusion that prompts an additional statement of concern pertains to the impacts of additional OCS oil activity on public facilities and services in Ventura County (pp. 4-104 to 106). In this regard, it is stated (p. 4-106) that "...OCS development could contribute to potential deficits in water supply and sewage treatment capacities." Assuming that this conclusion is valid, our additional concern is based upon the assumption that the coastal communities in Ventura County (Oxnard, Ventura and Port Hueneme) might receive the vast majority of the negative impacts estimated by your analysts for the entire County.

The second conclusion that caught our attention is found within the discussion of cumulative impacts related to coastal land use (pp. 4-107 to 109). Within this section, other federal projects that might produce cumulative impacts are identified previous to stating the conclusion that, "This Sale No. 68 impact on land use, although relatively minor by itself, will tend to put a strain on future development in the area when combined with the other proposed activities for the Southern California area." We agree with the conclusion and wish to add that another federally authorized project should be identified and included as part of the Draft EIS because of its potential contribution to cumulative effects on both natural and social resources. The project referred to is the Oil and Gas Leasing Program for the Los Padres National Forest. Since over 57 percent of the 257 pending oil and gas lease applications are for areas within Ventura County, I think you will agree that this

Page 2
Environmental Assessment Manager
August 7, 1981

terrestrial leasing program should be included as a contributor to cumulative impacts.

The third conclusion that causes us to comment is related to Tourism. For reference, in the section titled "Impacts on Recreation" (pp. 4-110 to 4-115), it is stated that "Tourism is the second largest industry in the sale area (and) because much of tourism is dependent upon water-oriented recreation, an oil spill could have a considerable impact on the industry." Related to Oxnard we would like to inform you that tourism is one of our most important and dynamic growth industries. Therefore, any proposal of any nature that could result in potential harm to the tourist industry has to be viewed with serious concern. Since our tourist industry is based largely upon ocean related recreational activities that include beach going, boating, and deep sea sport fishing around the Channel Islands, we would favor modifying the proposed lease sale to reduce potential conflicts with the Channel Islands National Marine Sanctuary.

To summarize, we would like to respectfully request that you include within the finalizing addendum to OCS Sale No. 68 the following:

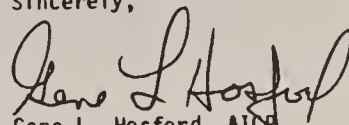
1. A quantification of the impacts of the proposed OCS development on the urban infrastructure (water supply, sewerage, and schools) of the coastal communities in Ventura County--in particular the impacts on the coastal communities of Oxnard, Port Hueneme and Ventura. The quantification should be based upon a realistic estimate of demand for public service that will be placed upon these communities as a result of all existing and proposed OCS development in the Santa Barbara Channel.
2. An estimate of the cumulative effects that will impact the urban infrastructure of the coastal communities of Ventura County as a result of the proposed Los Padres National Forest Oil and Gas Leasing Program. Since minerals involved in both OCS Sale No. 68 and the Los Padres Leasing Program are under the purview of the Department of Interior, it would seem appropriate to carry out the evaluation on a concurrent and coordinated basis. Also, since the Draft EIS for OCS Sale No. 68 is obviously much farther along than the Draft Environmental Assessment prepared for the Los Padres Leases it would seem appropriate to use the Draft EIS as the vehicle to discuss the cumulative effects of both projects as requested above.
3. An identification of real sources of funding that could be utilized to pay for the increases in urban infrastructure that are going to be required to respond to the needs of the oil industry.

In other words, "what sources of federal funding can be made available to local agencies that are negatively impacted by demands for public services that will result from federally authorized projects?" To amplify:

- a. Are there federal funds available now? 4.7
- b. Should draft legislation be developed for presentation to the U.S. Congress that will authorize granting of funds to local jurisdictions that are negatively impacted by energy projects that are deemed in the national interest? 4.8
- c. Could the oil company acquiring a lease be required to make available a combination grant and low interest loan to local agencies that would be negatively impacted by their activity? 4.9

In conclusion, please call me or Mr. Ralph Steele of this department after you have had a chance to review this letter so that we can clarify any questions that you might have. Also, I would like to request that we be informed of any additional opportunities to recommend that OCS Sale No. 68 be modified so as to reduce the potential impact on the Channel Islands National Marine Sanctuary, and thereby, not detract from our vital tourist industry.

Sincerely,


Gene L. Hosford, AICP
Planning Director

GLH:RJS:nmc

cc - City Manager, Finance Director
Oxnard Convention and Visitors Bureau
Cities of: Port Hueneme, Ventura,
Carpinteria and Santa Barbara
Counties of: Ventura and Santa Barbara
State Office of Planning and Research
California Coastal Commission
U.S. Forest Service-Goleta

- 4.1 POCS Technical Paper No. 81-4 identifies communities in Ventura County where stress on public facilities and services could occur given many assumptions concerning the number and location of new residents. The EIS contains a summary of that analysis.
- 4.2 Little information is available on the contribution of potential oil and gas leasing within the Los Padres National Forest to the pressures on social resources of Ventura County. No increase in the demand for public services and facilities or housing is expected from exploration activity within the forest. Since the area is entirely unexplored, no estimates can be made of development activities.

The Environmental Assessment prepared by the Forest Service for the Los Padres "leases" is not an evaluation of all potential impacts of the activities. Rather, it is a set of recommendations, and accompanying analysis, for stipulations pertaining to surface activity associated with exploration of each proposed lease area.
- 4.3 Comment noted.
- 4.4 See response 4.1.
- 4.5 See response 4.2.
- 4.6-9 Numerous uncertainties exist in projecting public fiscal impacts resulting from OCS-induced growth. Although the Blaney-Dyett study (POCS Technical Paper No. 81-4) evaluated the potential ability of local governments to finance new or expanded public facilities, the net fiscal effect cannot be determined due to the lack of data concerning the tax revenue effect of expanding commercial and industrial activity. Increases in the demand for public services will only be generated if new population is drawn to an area by economic growth. The major reason for public service impacts (related to this proposal) is onshore secondary and induced activity. The employment and, hence population, changes directly linked to offshore operations are minimal. POCS Technical Paper No. 81-4 discusses sources of funding for public facilities.



CITY OF REDONDO BEACH
CALIFORNIA

415 DIAMOND STREET
REDONDO BEACH, CALIFORNIA 90277

August 7, 1981

TELEPHONE
(213) 372-1171

Mr. William E. Grant, Hearings Officer
c/o United States Department of the Interior
Bureau of Land Management
1340 W. 6th Street, Room 200
Los Angeles, CA 90017

Dear Mr. Grant:

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED OUTER
CONTINENTAL SHELF OIL AND GAS LEASE-SALE NO. 68

At its regular meeting of July 27, 1981, the Redondo Beach City Council considered the Draft Environmental Impact Statement for the Proposed 1982 Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California (OCS Sale No. 68). After review and discussion, the City Council voted to oppose OCS Sale No. 68 due to potential adverse effects upon the Redondo Beach Coastal and recreational environment.

The following problems are among the City's primary concerns.

1. Water Quality - The Draft EIS contemplates the degradation of water quality to an approximate distance of 1000m from oil platforms and rigs, with unknown long term effects from discharges from these facilities. Several of the proposed tracts are very close to the shoreline of the Santa Monica Basin and San Pedro area, and lie within fertile commercial and recreational fishing areas.

2. Air Quality - The Draft EIS contemplates air quality impacts onshore that will increase pollutant loadings in areas "already exceeding the air quality standards." The Southern California area is currently plagued by a growing smog and air pollution problem giving rise to frequent unhealthy situations.

Mr. William E. Grant
August 7, 1981

3. Biological/Ecological Impacts - As referenced earlier, the Santa Monica Basin is a fertile commercial and recreational fishing area. The Draft EIS contemplates ecological losses to surface fishes (i.e., bonito, mackerel and anchovy) in the event of an oil spill. These surface fishes play a prominent role in Redondo Beach sports fishing activities and commercial/business operations. The City is also concerned about the plight of area marine mammals and seabirds which the EIS claims are "vulnerable to impacts associated with offshore oil and gas development activities."

4. Transportation Systems - All of the proposed tracts in the Santa Monica Basin lie directly in the paths of existing shipping lanes. The City fears that such conflicts maximize the opportunity for a serious accident, particularly when one considers the frequent ocean fog situation in this area. The area has already suffered a major accident when a Greek freighter ran aground on a foggy night in the Palos Verdes Peninsula area.

5. Visual Blight - While it is difficult to conceptualize, the proximity of the Santa Monica Basin tracts to the shoreline suggests that the oil platforms and rigs would be visible to coastal residents and visitors.

For all of the reasons listed above, the Redondo Beach City Council voted to oppose OCS Sale No. 68. We trust that the City's position will be made part of the record and given due consideration along with public testimony and other written communications in response to the Draft Environmental Impact Statement.

Yours truly,

Timothy J. Casey
Timothy J. Casey
Acting City Manager

TJC:c1

cc: Mayor and City Council
Central Files

Responses to CITY OF REDONDO BEACH

- 5.1-2 Comments noted.
- 5.3 BLM recognizes the importance of surface fish to commercial and sport fisheries. As indicated in the EIS, adoption of Alternative 4 would slightly reduce impacts to these fisheries.
- 5.4 Comment noted.
- 5.5 No deletion alternative concerning tracts in the VTSS has been proposed. DOI will work with U.S. Coast Guard on a case by case basis as exploration and development plans are submitted. The Eleventh Coast Guard District has recommended to their headquarters in Washington, D.C. (as a result of their mandated Port Access Route Study in Southern California) that existing vessel routing schemes be retained with a few minor modifications "to better accommodate the competing uses of the offshore waters" (Oral Testimony, Captain Donald M. Taub, Eleventh Coast Guard District at Long Beach Proposed Sale No. 68 DEIS Hearing, July 31, 1981). Alternative 5 addresses the impacts associated with deletion of Tract 165 in the LA-Long Beach Pre-cautionary Area.
- 5.6 The EIS has been revised to address the impacts of the visibility of platforms.
- 5.7 Comment noted. See responses above.



David T Shuffman
Mayor



Page 2
August 11, 1981

August 11, 1981

E. A. Manager
Pacific OCS Office
Board of Land Management
1340 West 6th Street, Room 200
Los Angeles, CA 90017

Dear Sir:

SUBJECT: COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR OCS
LEASE SALE #68

The Environmental Resource Management Committee has been designated by the City Council to review and comment on the DEIS. The following represents their comments:

SCOPING--On August 12, 1980 staff presented the City's comments on the scope of the EIS at the Bureau of Land Management hearings in Montecito. These comments were followed by a letter to William Grant. These comments were not addressed in the DEIS and there appears to be no attempt to explain why they were not considered.

6.1

SOCIOECONOMIC IMPACTS--The DEIS makes no mention of the effect on City and County beaches and parks. Diminished recreational values could be considerable due to the visual affront of increased OCS activities and the potential for increased shoreline pollution. How will OCS development affect the local economy, especially in regard to tourism?

6.2

HOUSING--The DEIS attempts to minimize the significance of the lease sale on the South Coast housing market. The report predicts a demand of approximately 400 housing units on the South Coast yet states, "...there is enough diversity and variety in the available housing stock to permit people of varying incomes to find a home..." Given the present situation of high costs, low vacancy and somewhat limited new housing starts, the statement is just not supported by facts. It appears that the entire section dealing with housing grossly understates the effects of the project and betrays the author's lack of comprehension and knowledge of local conditions.

6.3

PUBLIC SERVICES--The report states that "population increases due to OCS development are expected to be negligible" even though the peak year would equal about three years of normal growth for Southern Santa Barbara County. We contend that this is not a "negligible impact" and that there will indeed be increased demands for public services and additional strains on a limited water supply.

6.4

BUFFER ZONE OF THE FEDERAL ECOLOGICAL PRESERVE--It is quite disturbing that the prospect of leasing activities in the Buffer Zone was omitted entirely from the DEIS. It is imperative that a discussion of the environmental impacts associated with leasing this area be included. This was a major concern of both the City and the County during the scoping sessions and the absence of such a discussion appears to be in violation of NEPA requirements.

6.5

BIOLOGICAL RESOURCES--The DEIS contains no analysis of the effects of new leasing activities upon the beach and tidal area ecosystem. Interference with or elimination of one of the components of this fragile ecosystem could have serious consequences on other marine life. It seems that a 10% chance of a spill which could affect the beach is high and not low as the report would indicate.

6.6

AIR QUALITY--Santa Barbara is already a non-attainment area for a number of pollutants. The onshore areas will be further impacted due to increased emissions of HC, NO₂ and other pollutants. This will increase the difficulty of Santa Barbara obtaining air quality standards. Because OCS activities are outside local jurisdiction, future sacrifices and changes in land use decisions may have to be made to maintain present quality air standards.

6.7

CUMULATIVE EFFECTS--The environmental and socioeconomic effects of OCS #68 are considerably increased when viewed along with other federal activities (MX and Space Shuttle), State tidelands leasing activities and ongoing local growth. The housing market, public services and certain aspects of the local economy could be substantially affected. The EIS should evaluate these cumulative effects and clearly identify those that are significantly adverse.

6.8

CONCLUSION--Review of the DEIS provides the reader with substantial understatement of the potential significant effects associated with this project. Many of the conclusions appear to be based on erroneous data, simplistic analysis and a misunderstanding of local conditions. The general tenor of the report is one of advocacy biased in favor of the full lease sale. A document such as this is further evidence that an accelerated leasing program would be inappropriate.

6.9

In the past BLM has responded to the City's and other agency comments in a very general manner, usually in a short paragraph with no real substance or attempt to address the issues. It is hoped that this will not be the case when the final EIS is prepared.

6.10

We thank you for the opportunity to comment and look forward to major improvements in the FEIS.

Sincerely,

David T. Shuffman
Mayor

7-96

Responses to CITY OF SANTA BARBARA

- 6.1 We have reviewed the City's scoping comments again and have included in the FEIS any issues inadvertently omitted from the DEIS.
- 6.2 The EIS has been revised to more fully address this subject.
- 6.3 Sections III.C.4 and III.D.3 have been revised to include more information on housing in the South Coast area.
- 6.4 Section IV.C.13 discusses potential stresses on public services and facilities in Santa Barbara County. Population increases due to OCS development are expected to be negligible as indicated, since these increases are compared to projected population increases in Santa Barbara County. Analyses for areas smaller than a county unit cannot be reasonably conducted.
- 6.5 The Adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone) is discussed in FEIS in Alternative 3.
- 6.6 See Section IV.C.4, Intertidal Benthos.
- 6.7 Potential air quality impacts in the Santa Barbara area were addressed in POCS Technical Paper No. 81-7 (e.g., Chapter VI, Tables VI-1, VI-2, and VI-4; and Figures D-1 and D-2). As shown in the paper, based on the USGS production scenario, the long-term and short-term effects of inert pollutants on the County are not significant, and would not cause any violation of the Federal or California standards (also refer to Table 5 in the Executive Summary). In some worst-case low-probability scenarios which consider cumulative effects of the existing and proposed offshore activities, an incremental increase in ozone concentration for the inland area was calculated.
- 6.8 Sections III.D.3 and IV.C.14 were substantially revised to more completely address probable strains on the housing market. Cumulative economic analysis was done for the EIS and is included. The base case projections included estimates of jobs and investment resulting from proposed and ongoing projects in the area and previous lease sales.
- 6.9 The EIS has been revised when appropriate.

6.10

When a very large number of comments are received, it is not possible for BLM to respond to each in detail in the FEIS. Since the number of comments on the Proposed Sale No. 68 DEIS is not too excessive, we have responded to them to the maximum extent possible in the FEIS.



SANTA MONICA

1685 Main Street, Santa Monica, California 90401

Mayor Ruth Yannatta Goldway

August 11, 1981

Pacific OCS Office
Bureau of Land Management
1340 West 6th Street
Room 200
Los Angeles, California 90017

Att: E. A. Manager

RE: Written Testimony Opposing OCS
Lease Sale #68

Dear Mr. Manager:

The following comments are submitted as written testimony relative to the Department of Interior's proposed Lease Sale #68 for oil and gas development and exploration in California's outer continental shelf (OCS) from Point Conception to the Mexican Border.

The City of Santa Monica has consistently opposed efforts by the Department of Interior, through the Bureau of Land Management, to lease portions of our off-shore areas to oil companies for oil and gas exploration and development. We have participated with many local communities and groups in a variety of ways to protect ourselves and our coast from potentially hazardous drilling activities near our communities and preserve areas.

The Draft Environmental Impact Statement for Lease Sale #68, prepared by the Bureau of Land Management (May 1981), does not sufficiently emphasize the negative impact of proposed oil drilling on many aspects of our daily lives. Oil and gas exploration in tracts lying just outside Santa Monica Bay pose a particular threat to our community.

The potential for oil leakage and/or spills during oil and gas exploration and development is great. Effects of oil spills are devastating and long lasting. The threat this causes our City cannot be overstated.

Environmental Concerns

Marine life from plankton beds to fish to marine mammals and seabirds are endangered by leasing areas of their habitat to be used for oil drilling and spillage. The marine preserves created near and around the Channel Islands could suffer irrevocable harm from a minor spill.

TO: Pacific OCS Office
Bureau of Land Management
Att: E. A. Manager

August 11, 1981

- 2 -

The potential for contributing more pollutants to the ocean is tremendous. The water quality effects our health, safety, social and economic well-being. The effects of oil spillage must be considered as well as the additional tons of effluents, fuel discharge, drill mud and other waste products of the actual exploration and development activity.

Our southern California beaches (and tangent riparian systems) are some of the best and most heavily used in the world. We feel the Santa Monica Bay beaches are a rich ecological resource that support a myriad of plant and animal life. Oil spills and the pollution brought about by exploration activities are a detriment to these places of beauty and natural habitat.

The proposed Lease Sale 68 carries with it the potential to further pollute the air. On-shore breezes will carry with them any effluents generated by the proposed activity; this will aggravate the existing air quality problems in the Los Angeles basin area.

The geohazards such as epicenters and fault lines, and seismic activity located in and around Lease Sale #68 pose an enormous threat potential.

Economic, Social and Cultural Concerns

Besides the obvious hazards Lease Sale #68 presents to the environment, there will be a negative impact on our local economy. Santa Monica has a substantial interest in preserving our recreation (and support) industries. We depend on the quality of our beaches, beach facilities and the ocean vistas provided in these areas to attract millions of visitors per year.

Over 16 million people visited our community last year to enjoy the beaches, beach walk/bikeway, City parks, municipal pier and City-owned enterprises at the pier. Tourists staying in our hotels and motels (approximately 750,000) generate over \$93 million in revenue.

Local merchants depend on the character of our community to attract and maintain customers. The commercial and sport fishing industries rely heavily on the ocean and marine eco-system for subsistence. Oil development will adversely affect our local economy and threaten our recreation and fishing industry.

Oil and gas development in Lease Sale #68 and particularly in the tracts located at Santa Monica Bay (see Attachment I), will prove to be a degradation to our ecological, economic, social and cultural life. The lifestyle we enjoy is inter-connected with the ambiance and integrity of our seashore. We feel that leasing of off-shore tracts to be used for oil development poses a threat to this integrity and our lifestyle.

TO: Pacific OCS Office
Bureau of Land Management
Att: E. A. Manager

August 11, 1981

ATTACHMENT 1

- 3 -

We fully appreciate the energy crisis our nation faces. We are all the victims of the economic policies which have heretofore encouraged dependence on foreign oil. However, in our effort to mitigate this dependence, we must balance energy resource development with the protection and preservation of our other, just as valuable natural resources - the ocean and coastline of our community, State and nation.

7.9

We urge the Department of Interior to reconsider its course and withdraw its nomination of OCS Lease Sale #68, particularly the tracts located at Santa Monica Bay, for oil and gas exploration and development.

Very truly yours,


RUTH YANNATTA GOLDWAY
Mayor

RYG:d'm

Attachment

TRACTS LOCATED AT SANTA MONICA BAY:

38N/46W	40N/50W
38N/47W	40N/51W
39N/47W	41N/50W
39N/49W	41N/51W
39N/50W	42N/53W
40N/49W	42N/54W

Responses to CITY OF SANTA MONICA

Section I.B.6 where the discussion concludes "... it is believed that all potential geological hazards are adequately mitigated."

After a tract is leased, the lessee is required to conduct detailed geological hazards and cultural resources surveys. The data from these surveys are independently analyzed and approved by the U.S. Geological Survey, Conservation Division, prior to any exploration drilling. These analyses and recommendations cover all potential hazards, including seismic hazards. Further site specific surveys and analyses are required prior to any development activity, including facilities emplacement. USGS regulations (30 CFR 250) outline under what conditions and how geohazard information will be collected and used.

When appropriate, the EIS has been revised to more fully address these concerns.

Comment noted.

- 7.1 Negative impacts anticipated to result from the proposal and the likelihood of these impacts occurring are discussed in the EIS. Impacts with a remote probability of occurrence also are addressed in the EIS. Contrary to the comment, no scientific evidence exists that oil spill effects in general, are devastating and long lasting; however, significant impacts could result in the unlikely event that oil entered estuaries (see Section IV.C.8). Alternative 4 discusses deletion of tracts adjacent to Santa Monica Bay.
- 7.2 Concerns noted. We know of no scientific evidence that indicates significant irrevocable harm from a minor spill. The potential for contributing significantly more pollutants to the entire ocean or even the entire proposed lease area is not tremendous from this proposal. Cumulative impacts of pollutants are discussed in the EIS.
- 7.3 Alternative 4 discusses deletion of tracts adjacent to Santa Monica Bay, primarily due to potential impacts from development and production, not exploration.
- 7.4 Potential air quality impacts in the Santa Monica and West Los Angeles area were addressed in detail in POCS Technical Paper No. 81-7 (e.g., Tables VI-1 and VI-2, and Figures D-3 through D-5). The information for this Technical Paper was used in developing the EIS.
- 7.5 Comment noted. The threat posed by geohazards are discussed in the EIS. Additional information follows: Santa Monica Bay is demonstrated to be an area with an active seismic history as shown on the Geological Hazards Map visual in Volume II of the EIS. The references for the geohazards information on the map are listed in the lower left corner. Any threat posed by geohazards to oil and gas development activities and/or facilities is covered in several ways. First, each tract in the Sale is scientifically analyzed by the U.S. Geological Survey, Conservation Division, for the location and type of any hazard that could impact post-Sale activities. Where the information shows a severe hazards potential, that tract is either deleted or proposed for stipulation prior to the Sale. At this writing, the staff analysis and recommendation process is nearing completion on Proposed Sale No. 68 tracts. The stipulation procedures are summarized in

7.6-8

7.9

ROBERT K. DORNAN
27TH DISTRICT, CALIFORNIA
FOREIGN AFFAIRS

AFRICA
ASIAN AND PACIFIC AFFAIRS
TASK FORCE ON MISSING-IN-ACTION
HUMAN RIGHTS AND INTERNATIONAL
ORGANIZATIONS
SELECT COMMITTEE ON AGING
SELECT COMMITTEE ON
NARCOTICS ABUSE
AND CONTROL
TASK FORCE ON DRUG ABUSE IN THE
MILITARY
SPECIAL COMMITTEE ON
HOUSE RECORDING



Congress of the United States
House of Representatives
Washington, D.C. 20515

August 5, 1981

WASHINGTON OFFICE
322 CANNON HOUSE OFFICE BUILDING
WASHINGTON D.C. 20515
(202) 225-6451

DISTRICT OFFICES:
8151 WEST CENTURY BOULEVARD
SUITE 1018
LOS ANGELES, CALIFORNIA 90045
(213) 642-5111
1815 VIA EL PRADO
SUITE 207
REDONDO BEACH, CALIFORNIA 90277
(213) 940-2951

The Honorable James G. Watt
August 5, 1981
Page Two

2. air quality: drilling activity will measurably increase the amounts of nitrogen oxides, sulphur oxides and reactive hydrocarbons emitted into this heavily polluted areas. 8.2
3. shipping lanes: the twelve tracts lay directly and dangerously on the major north-south shipping lanes. 8.3
4. oil spills: the environmental and recreational impacts resulting from an oil spill were the most important reasons for Santa Monica Bay's exemption from Lease Sale No. 68. The probability that an oil spill will occur from development of these twelve tracts is not disputed. We cannot now undermine the exemption of Santa Monica Bay and jeopardize its marine-mammal life and our beaches by permitting oil drilling along its boundary. This danger becomes especially obvious when you consider the surface currents in the area and the fact that, for example, tract number 129 is only 4.1 miles off Point Dume. 8.4

The Honorable James G. Watt
Secretary
Department of the Interior
Washington, D.C. 20240

Dear Mr. Secretary:

In response to your call for public comment on the Draft EIS for Lease Sale No. 68, I strongly urge that you delete from this proposed sale twelve tracts which lay along the periphery of Santa Monica Bay (tract nos. 122, 123, 128, 129, 136, 137, 138, 145, 146, 147, 151 and 152).

As you know, last year I chaired the Save Our Bay Committee which was successful in having deleted from Lease Sale No. 68 all the tracts within the geographic boundary of Santa Monica Bay. That victory for the people of Los Angeles cannot now be compromised by allowing oil drilling at the "front door" of the bay.

It should be pointed out that when the City of Los Angeles prepared the deletion recommendations in Spring, 1980, recommendations that I endorsed, it was believed that these twelve tracts were included in then-Secretary Andrus' May, 1980 decision. Unfortunately, Santa Monica Bay was mistakenly considered in geographic terms (Pt. Dume to Pt. Vicente) rather than in terms of tracts which present a significant danger to the bay itself. In that regard, these twelve tracts pose no less a threat to Santa Monica Bay than those originally deleted in May, 1980. Upon learning that these twelve tracts were not included, the City of Los Angeles amended its request when the draft EIS was completed.

Briefly stated, my opposition to the twelve tracts centers around four major concerns:

1. geological hazards:
 - A. seismic activity: the twelve tracts are in the vicinity of three active fault areas: the Santa Monica; Malibu and Palos Verdes fault lines.
 - B. sedimentary shifts: Los Angeles/BLM has recently concluded a study indicating widespread sedimentary movement along the ocean floor of several of the twelve tracts.

Again, I strongly urge you to delete these twelve tracts from Lease Sale No. 68.

Thank you for your time and attention. I look forward to hearing from you at your earliest convenience.

Sincerely,

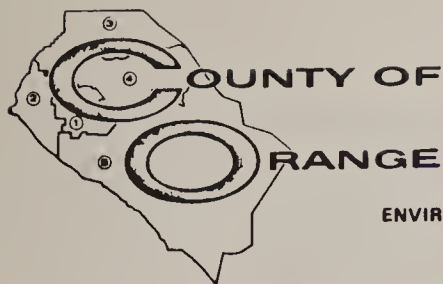
Bob Dornan
Robert K. Dornan
Member of Congress

RKD/bb

7-101

Responses to CONGRESSMAN ROBERT K. DORNAN

- 8.1a Comment noted.
- 8.1b Geological hazards are identified in Section III.A and on the Geological Hazards Map visual. The tract stipulation process relative to geological hazards is summarized in Section I.B.6, where the discussion concludes that, ". . . it is believed that all potential geological hazards are adequately mitigated."
- The U.S. Geological Survey, Conservation Division staff is nearing completion of the analysis of high resolution geophysical data which will result in the identification of those tracts which are found to contain geological hazards that could seriously affect or impair oil and gas exploration and development activities. The twelve tracts cited by Congressman Dornan will be judged within the established format for all Proposed Sale No. 68 tracts. Deletion of these tracts is considered in Alternative 4.
- Also see response 18.61.
- 8.2 Chapter V of POCS Technical Paper No. 81-7 describes in detail the potential emissions associated with Proposed Lease Sale No. 68 activities. Chapter VI of this paper discusses the impacts of these emissions (e.g., Tables VI-1, VI-2, VI-4; and Figures D-1 through D-5). The EIS was based on the significant impacts identified in this technical paper.
- 8.3 See response 5.5.
- 8.4 Alternative 4 discusses deletion of tracts adjacent to Santa Monica Bay.



ENVIRONMENTAL MANAGEMENT AGENCY

PLANNING
811 NORTH BROADWAY
SANTA ANA, CALIFORNIA
(714) 834-4643

FILE

June 29, 1981

Pacific OCS Office
U.S. Bureau of Land Management
1340 West 6th Street
Room 200
Los Angeles, California 90017

Attention: E. A. Manager

Dear Mr. Manager:

Herein find the concerns of the Environmental Management Agency, Environmental Analysis Division, County of Orange, regarding Draft EIS/OCS Sale No. 68.

1. Reference (page iii, first paragraph) is made to the relative small impact of petroleum hydrocarbons upon water quality (given a special episode) as opposed to relative larger volumes of municipal oil and grease discharges. Such a conclusion understates the potential adverse impacts possible to Orange County ocean water quality, marine and terrestrial habitats, as well as miles of recreational beaches.

9.1

2. Page iii, fourth paragraph; statistics cited are not consistent with those in Table IV. A.1.a-1 (pp. 4-10 and 4-11).

9.2

3. Impacts via oil spills upon rocky tidal habitats along Orange County Coasts are considered high given the limited parameters of such habitat available. Benthic and other marine organisms associated with man-made breakwaters would also be impacted.

9.3

Estuaries such as Anaheim Bay and Newport Bay could be irreparably damaged. Moreover, the Doheny Beach Marine Life Refuge as identified within the Orange County Beach Conservation Element, could be jeopardized. The importance of such resources to Orange County and Southern California should be expanded upon in the FEIS.

9.4

4. An oil spill inundating large beaches located within Orange County could deter hundreds of thousands of beach users from such utilization. Businesses dependent upon beach recreationalists could be economically affected during peak months of operation. This is particularly germane to Seal Beach, Bolsa Chica State Beach, Huntington Beach State Beach, Newport Beach, Corona del Mar Beach, Laguna Beach, Doheny State Beach, and Capistrano Beach. Elaborate

9.5

MURRAY STORM
DIRECTOR, EMA

ROBERT G. FISHER
DIRECTOR OF PLANNING

MAILING ADDRESS
P.O. BOX 4048
SANTA ANA, CA 92702

Page 2

the importance of beach resources to Orange County.

5. The FEIS should delineate the ability of Los Angeles Basin refineries to accommodate the processing of crude oil at maximum potential as proposed in Sale No. 68. How near capacity are these facilities?

9.6

6. Given a seismic episode and/or Tsunami activity, what mitigation is provided to prevent potential equipment failure and resultant oil seepage? This is especially important in view of the value of Orange County beaches to Southern California.

9.7

7. Oil spill contingency plans and equipment are acknowledged. Their efficiency is questioned given the miles of Orange County coastline which could be impacted vis a vis a major oil spill.

9.8

8. The FEIS should identify the life of pipeline facilities and average replacement timelines to better ascertain hazard quotients.

9.9

9. Additional oil platforms create new navigational hazards to shipping, commercial fishing boats, and recreational boaters.

9.10

10. Page 4-129; the DEIS indicates "it is believed that Sale No. 68 - related development would cause a visual degradation in those areas where development occurs." New oil platforms and ancillary facilities (i.e., onshore facilities, tankers, etc.) pose additional visual impacts along Orange County's coastline already exacerbated by offshore oil platforms. This may or may not be of social and economic consequence to individuals dependent upon coastal resources for housing, business, and recreational opportunities. In particular, tourism in Orange County may be affected.

9.11

If you require any clarification regarding these concerns, feel free to call Wayne S. Johnson of the Environmental Analysis Division at 834-2071.

Very truly yours,

Robert P. Ruelby
Kenneth E. Smith, Manager
Environmental Analysis Division

WSJ:mlt

7-103

- 9.1 The water quality impacts of chronic discharges of hydrocarbons is small. Larger accidental spills would adversely affect water quality but not to any great degree in the open ocean. See response 18.80. In addition, the EIS has been revised to more accurately portray possible impacts to recreational beaches. POCS Technical Paper No. 81-5 addresses impacts of OCS hydrocarbon development on recreation and tourism.
- 9.2 Probabilities for both inner and outer shores of islands were combined according to formula:

$$P_{1,2} = 1 - (1 - P_1)(1 - P_2)$$
and are correct in the DEIS. The statistics are not inconsistent.
- 9.3 Comment noted. The isolation of the intertidal on the Irvine Coast is indicated in Section IV.C.3. Break-water communities will be impacted similarly to rocky intertidal communities and, because of space limitations, were not separately discussed in EIS.
- 9.4 Both bays and the intertidal areas of Orange County are discussed in EIS. Although lower Newport Bay could suffer significant damage from oil spills, upper Newport Bay appears to be the more sensitive and unaltered bay. The probability of a spill from OCS operations entering the more sensitive bay is believed to be extremely small.
- 9.5 The EIS has been revised as appropriate.
- 9.6 Facility capacity is discussed in Bonner and Moore Associates, Inc., The California Oil Scenario Study, (March 20, 1980) which was used as a reference for the EIS.
- 9.7 See response 7.5.
- 9.8 Section IV.A.1 provides information on the effectiveness of oil spill clean-up and containment.
- 9.9 The pipelines are assumed to service the oil and gas operations for the life of the field. No pipeline replacement time frames were developed.
- 9.10 The impact of platforms on navigation is discussed in the EIS.
- 9.11 When appropriate, the EIS has been revised to more fully address these impacts.

WILLIAM B. WALLACE
Chairman
County Board of Supervisors
DAVID V. VAGER
County Clerk
ROBERT E. KALLMAN
County Auditor
DAVID C. HOLMQUIST
County Engineer



COUNTY OF SANTA BARBARA
BOARD OF SUPERVISORS
105 East Annapolis Street
Santa Barbara, California 93101
Telephone (805) 966-1611
Fax: 7610

ROBERT E. KALLMAN
County Auditor
and Treasurer
105 East Annapolis Street
Santa Barbara, California 93101

March 6, 1981

Honorable James G. Watt
Secretary of the Interior
Department of the Interior
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Mr. Secretary:

This letter concerns your proposal to offer the Buffer Zone of the Federal Ecological Preserve, in the Santa Barbara Channel, as a part of OCS Lease Sale #68 (Southern California). I am writing to inform you, and assure you, that the Board of Supervisors and the citizens of Santa Barbara County stand firmly opposed to inclusion of the Buffer Zone in that offering. Although Santa Barbara County is well aware of the energy crisis facing the nation, I feel compelled to elaborate here on the concern for the Buffer Zone and the continued integrity of the Ecological Preserve.

On March 2, 1981, the Board of Supervisors of Santa Barbara County voted unanimously to repeat our request of February 11, 1980 to then Secretary of the Interior Cecil Andrus, to delete both the Santa Barbara Channel Ecological Preserve and Federal Buffer Zone from Lease Sale #68. These areas were set aside by Executive Order in 1969 to protect Santa Barbara in perpetuity from the hazards of OCS oil and gas development. Secretary Andrus chose to exempt only the Ecological Preserve. We are asking you to exempt the Buffer Zone as well, as an act of good faith on the part of the Federal Government in honoring a previous commitment. This protective zone is truly ours. The loss of the eight tracts in the Buffer Zone would be miniscule compared to the great number of Channel tracts being offered.

The 15 Tract Ecological Preserve and Buffer Zone have stood for twelve years as a symbol of the Interior Department's commitment

to the preservation of sensitive environmental areas and to marine productivity. Secretary Hickel withdrew the Ecological Preserve and Buffer Zone "from all forms of disposition, including mineral leasing.....to protect and preserve the values of this area.....for the benefit and enjoyment of this and future generations".

The Preserve's immediate proximity to our beaches and south coast cities has contributed a measure of security to the environmental quality enjoyed by those who live and derive their livelihood from the area, and from the millions of visitors who value this environment. It is essential to the preservation of one of our most scenic resources, the viewshed from Montecito to Goleta. The Preserve and Buffer Zone protect the adjacent State Sanctuary from potential drainage. Increased incentives to drill within the State Sanctuary would result if the Buffer Zone was sacrificed for oil development. Both the State and this County have, on several occasions, acknowledged the Interior Department's wisdom of excluding the Preserve and Buffer Zone from earlier OCS leasing.

Inclusion of the Buffer Zone in OCS Lease Sale #68 would threaten the continued integrity of the Ecological Preserve. To allow oil and gas leasing within the Buffer Zone is an unparalleled breach of public trust, undermining the public confidence and the Federal Government's commitment to environmental protection.

To lease the Buffer Zone is to seriously jeopardize future relations between the Interior Department and State and local governments. The leasing of the Buffer Zone of the Federal Ecological Preserve is a matter of critical concern to the residents of Santa Barbara and many others. I trust you will give this matter your personal attention. Your actions with respect to the Buffer Zone will be of keen interest to all of us. I look forward to your response.

Sincerely,

William B. Wallace

William B. Wallace, Chairman
Board of Supervisors

Attachments: 1) Public Lands Order 4587
2) Map of Federal Ecological Preserve and Buffer Zone

cc: Senator Alan Cranston
Senator Hayakawa
Congressman Robert J. Lagomarsino
Governor Edmund G. Brown, Jr.
Assemblyman Gary Hart
Senator Omer Rains
Frank Gregg
Bill Grant
Carl Hetrick

Title 43—PUBLIC LANDS:
INTERIOR

Chapter II—Bureau of Land Management, Department of the Interior

APPENDIX—PUBLIC LAND ORDERS

[Public Land Order 4587]

OUTER CONTINENTAL SHELF OFF CALIFORNIA

Establishment of Santa Barbara Channel Ecological Preserve

By virtue of the authority vested in the President by the Outer Continental Shelf Lands Act (67 Stat. 462, 469; 43 U.S.C. 1341), and pursuant to Executive Order No. 10355 of May 26, 1952 (17 F.R. 4831), it is ordered as follows:

Subject to valid existing rights, the following described lands of the Outer Continental Shelf are hereby withdrawn from all forms of disposition, including mineral leasing, and reserved for use for scientific, recreational, and other similar uses as an ecological preserve:

The area is shown on official Outer Continental Shelf Leasing Map, Channel Islands Area Map No. 6B, approved August 8, 1968, and revised July 24, 1967, as:

CALIFORNIA

Official Leasing Map, Channel Islands Area
Map No. 6B.

	Block	Description
51	N. 65 W.---	NW $\frac{1}{4}$ NW $\frac{1}{4}$.
51	N. 66 W.---	N $\frac{1}{2}$..
51	N. 67 W.---	Do.
51	N. 68 W.---	N $\frac{1}{2}$ N $\frac{1}{2}$.
52	N. 64 W.---	All Federal portions there- of.
52	N. 65 W.---	Do.
52	N. 65 W.---	Do.
52	N. 67 W.---	Do.
52	N. 68 W.---	Do.
52	N. 69 W.---	Do.

The following described lands of the Outer Continental Shelf will be withheld from leasing as an adjunct to the Ecological Preserve.

The area is shown on official Outer Continental Shelf Leasing Map, Channel Islands Area Map No. 6B, referred to above, as:

CALIFORNIA

Official Leasing Map, Channel Islands Area
Map No. 6B.

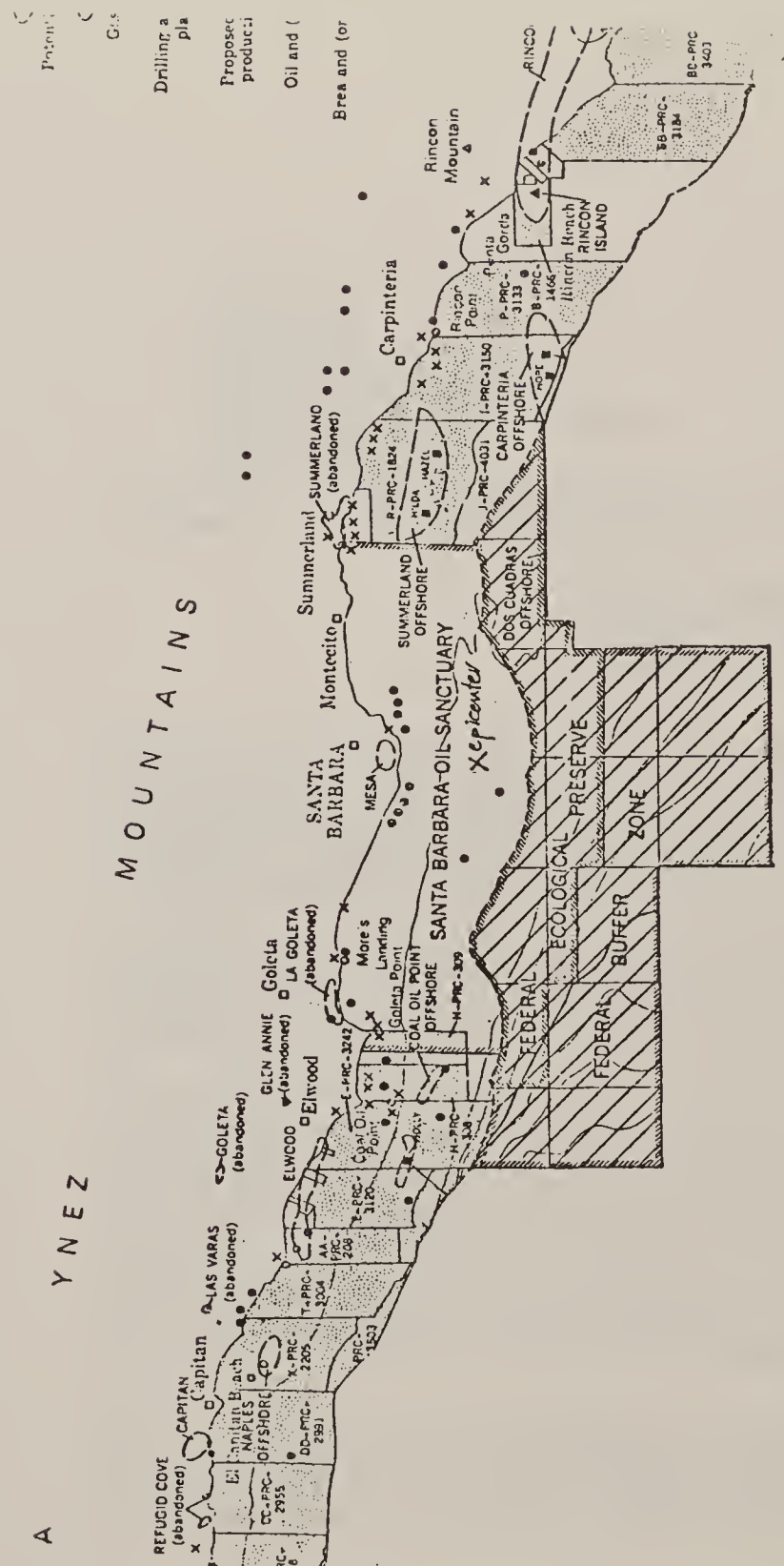
Block		Description
50 N. 65 W----	All.	
50 N. 67 W----	Do.	
51 N. 66 W----	3/4.	
51 N. 67 W----	Do.	
51 N. 68 W----	3/4 and S 1/2 N 1/4.	
51 N. 69 W----	All.	
51 N. 70 W----	E 1/2 and E 1/4 W 1/2.	
52 N. 70 W----	All Federal portions of E 1/2 and E 1/4 W 1/2.	

All persons, and particularly those engaged in commercial and sports fishing and other similar or related activities, are called upon, to conduct their activities in the areas described above in a manner which will help to protect and preserve the values of this area for scientific study, recreation, and other similar uses for the benefit and enjoyment of this and future generations.

WALTER J. HICKEL,
Secretary of the Interior.

MARCH 21, 1969.

[F.R. Doc. 69-3548; Filed, Mar. 25, 1969;
8:48 a.m.]



Response to COUNTY OF SANTA BARBARA, BOARD OF SUPERVISORS

10. The question of leasing in the Adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone) is addressed in the FEIS as Alternative 3.

COUNTY OF SANTA BARBARA

ALBERT F. REYNOLDS
Acting Director

105 E. Anapamu St.
Santa Barbara, Calif. 93101
Telephone 963-7171



DEPARTMENT OF RESOURCE MANAGEMENT

August 10, 1981

William E. Grant, Manager
Pacific OCS Office
Bureau of Land Management
1340 West 6th Street, Rm. 200
Los Angeles, CA 90017

RE: Santa Barbara County Comments on the DEIS for Proposed OCS
Lease Sale No. 68

Dear Mr. Grant:

Santa Barbara County has reviewed the DEIS on Proposed OCS Lease Sale #68. While the DEIS identifies many environmental impacts which would occur from Lease Sale #68, the document is deficient or erroneous in several major areas. The following comments include those presented at the July 28th Public Hearing and additional comments prepared subsequent to that hearing.

Scoping

The vast majority of comments on the scope and content of the DEIS, provided by Santa Barbara County, were not addressed in the DEIS (see August 11, 1980 letter from Santa Barbara County to William Grant). Please review the Santa Barbara County comments on scope and content and respond to each request for information to be included in the DEIS.

Sharing Risks and Benefits Among Regions

The principle of "a reasonable sharing of developmental benefits and environmental risks among OCS regions" is not served by offering additional tracts for lease sale in the Santa Barbara Channel. A total of 39 state tideland tracts and 128 federal OCS tracts have been leased in the Channel. Currently, there are 31 state leases and 85 federal leases in the Channel plus an additional 14 federal leases south of the islands. The Santa Barbara Channel is the single most intensively leased OCS petroleum region in the United States:

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pg. 2

approximately 65% of the Channel has been leased (40% is currently leased), compared to 12.5% for the Gulf of Mexico, 1% for the Atlantic OCS and .4% for the Alaskan OCS; the entire Channel has been considered for lease sale twice. No other region has been the subject of such a thorough leasing program and its concomitant risks and benefits. Hence, the principle of achieving "an equitable sharing of development benefits and environmental risks among the various regions" is not served by offering the Channel in the proposed Lease Sale #68.

Public Services

- (1) The Blayney-Dyett study entitled "The Impacts of Proposed OCS Lease Sale No. 68 on Public Services in Santa Barbara and Ventura Counties," recommended a specific mitigation measure to finance public facilities required as a result of OCS impacts. This must be referenced and discussed in detail, as the Lease Sale No. 68 impacts on public facilities are significant. The idea itself needs further development, including its similarity to other techniques like the fisherman's contingency fund, its administration, and necessary legislation for its implementation. 11.3
- (2) It is not a question of whether OCS Sale No. 68 related population changes "may" result in demand for additional services, they "will" (pg. 4-104). 11.4
- (3) There indeed will be additional strains on limited water supplies (pg. 4-107). 11.5
- (4) The baseline Space Shuttle and MX employment figures at VAFB are subject to change. Recent data was released June 10 and should be incorporated into this report (Blayney-Dyett Study, pg. 8). 11.6
- (5) The base Santa Barbara County 1975 population is off by 10,000; it was 280,605: Local totals for 1975 should also be corrected. Also, 1980 census population data is available and should be considered as it might affect choice of assumed growth rates (Blayney-Dyett Study, pg. 17). 11.7
- (6) Allocation of 60% of work force to reside in South Coast based on historical trends is not appropriate due to high housing cost, low vacancy rate and limited anticipated production due to water constraints. We disagree with the statement that "there is enough diversity and variety in the available housing stock to permit people of varying incomes to find a home..." Purchase costs begin at \$110,000 and rents begin at \$300/month for a studio in Santa Barbara City. We suggest a reallocation of population related OCS development be made to Lompoc-Santa Ynez-Ventura and less (30%) to Santa Barbara (Blayney-Dyett Study, pg. 28). 11.8

Housing

The demand for additional housing, a potentially severe impact for Santa Barbara County, is barely mentioned in the DEIS. There is no discussion of the severe shortage of affordable housing on the South Coast of Santa Barbara County, the rapidly accelerated prices, or of the current imbalance of housing demand with housing supply. These factors should be discussed in the "Affected Environment" section of the document.

The DEIS estimates that Lease Sale 68 activities will generate a housing demand of 754 units in Santa Barbara County. The report's conclusion that these demands "are minimal in comparison to the present development in the area", and that local constraints in housing growth "will be of help to local communities" in managing these impacts, are an indication of the author's complete lack of comprehension of the County's severe housing problems. The county is already faced with a serious imbalance between housing supply and demand. Local resource constraints and general financial conditions point to a worsening of the current imbalance. It is likely that housing supply will continue to be constrained while demand continues to increase. The escalation in demand is due to numerous factors, not the least of which are federal projects, including OCS leasing sales. Lease Sale 68 housing demand will act to limit future South Coast commercial/industrial development by causing a reduction in the housing available for this future development.

We submit that the housing impacts of Lease Sale 68 will have a significant adverse impact on Santa Barbara County. When Lease Sale 68 impacts are considered together with the impacts of other major federal projects, the cumulative impacts may be intolerable.

State Drainage Sales

The leasing of near-shore tracts in Lease Sale 68 will most probably result in State leasing of tracts in adjacent State waters to prevent the drainage of these tracts. This chain of events is evidenced most recently by the State Lands Commission preparation for leasing State waters north of Point Conception, adjacent to Federal tracts sold in Lease Sale 53. In that the leasing of State tracts will be a direct consequence of Lease Sale 68, a detailed discussion of the impacts from the leasing of adjacent State tracts is required by NEPA. These impacts will be particularly critical if tracts within the Channel Islands National Marine Sanctuary and the Federal Ecological Preserve Buffer Zone are leased. The environmental and economic impacts of oil and gas production operations directly adjacent to Santa Barbara City beaches, and adjacent to Santa Barbara Channel Island beaches and rookeries, must be discussed in light of the drainage sales which could follow Lease Sale 68.

Alaska and Foreign Oil "Backout"

Much of the DEIS underestimates the adverse impacts of Lease Sale 68 because of the Bureau of Land Management's unfounded assumption that the Lease Sale will backout an equal amount of Alaskan or foreign oil. Unlike Alaskan or foreign crudes imported to Southern California, Santa Barbara Channel crude is chiefly heavy and contains a high percentage of sulfur. Channel crude is unattractive to Southern California refineries in comparison to Alaskan or foreign crudes. As in the past, much of the California produced crude will be shipped to the Gulf States or to Japan. A 72% increase in the foreign export of California produced crude occurred in the first quarter of 1981 compared to 1980. Without substantial refinery modification in Los Angeles, and suitable economic incentives to refine Channel crude, the oil produced in Lease Sale 68 will go to other areas of the United States or will be exported to foreign countries. The DEIS should clearly state that both Lease Sale #68 production and increased foreign imports will result in a greater risk of vessel collisions and oil spills. As evidenced by past OCS production, Lease Sale #68 will use a greater number of small tankers, rather than the larger tankers used for importation of foreign crude. The greater amount of tanker traffic which accompanies Lease Sale #68, will result in a greater risk of vessel collisions and oil spills compared to the risk associated with tankering of imported oil.

Buffer Zone of the Federal Ecological Preserve

The omission of any reference to the Buffer Zone of the Federal Ecological Preserve is an example of BLM's total disregard for local and State agency input to the EIS process. Both Santa Barbara County and the State have repeatedly stated their opposition to leasing the Buffer Zone, and have presented the environmental impacts which would accompany leasing of the Buffer Zone tracts. Omitting a detailed discussion of the environmental impacts associated with leasing of the Buffer Zone violates NEPA, which requires a discussion of existing rules which would be violated by the proposed project. The document should discuss the proposed leasing of the Buffer Zone in the following sections: (1) Scoping Meetings (pg. 1-14) - as leasing the Buffer Zone was a major topic of concern discussed at the scoping level; (2) Regulatory Framework (pg. 1-19) - as leasing tracts in the Buffer Zone is indirect violation of Public Lands Order 4587; (3) Sanctuaries (pg. 1-49) - as the Buffer Zone is an area designated for no oil and gas leasing; (4) Alternatives (Section II) - as exclusion of the Buffer Zone from the Lease Sale should be discussed as an alternative to the proposed project; (5) Preserves (Affected Environment, pg. 3-74 and Environmental Consequences, pg. 4-92) - as the Buffer Zone is essential for maintaining the integrity of the Federal Ecological Preserve.

Oil Spill Containment and Clean-up

The statement on oil spill containment and clean-up limitations in the DEIS (pg. 4-16) is incorrect and highly misleading. In that the majority of the Lease Sale 68 tracts lie within Clean Seas spill cooperative area of responsibility, the DEIS should contain the information on containment and clean-up limitations presented in "Oil Spill Response Capability Study, Phase 1: Clean Seas, Preliminary Draft Report". Specifically, the document should state:

1. An oil spill can never be totally contained or cleaned up. 11.20
2. A large oil spill heading to shore cannot be stopped with today's technology. 11.21
3. Oil spills cannot be effectively tracked at night for containment boom deployment. 11.22
4. In the eastern Santa Barbara Channel, reduced boom efficiency from waves over two feet high occurs 45% of the time. Booms are not effective 7% of the time due to wave heights over six feet. 11.23
5. In the western Santa Barbara Channel, boom efficiency is reduced 69% of the time due to waves over two feet in height and containment booms are not effective 21% of the time due to waves over six feet. 11.24

The DEIS should also discuss the response times for onshore containment and clean-up equipment to reach outlying Sale 68 tracts. 11.25

Channel Islands National Marine Sanctuary

Santa Barbara County has repeatedly apposed leasing Marine Sanctuary tracts for oil and gas activities. The County agrees with the document's conclusions that deleting the Marine Sanctuary tracts would result in a negligible loss of oil and gas and would significantly reduce impacts to Marine Sanctuary resources. The discussion on the Channel Islands National Marine Sanctuary requires the following changes: 11.26

- (1) The DEIS doesn't consider drainage of oil and gas from Marine Sanctuary tracts by drilling in adjacent tracts. 11.27
- (2) Section I.B.8.b. should note that regulations prohibiting oil and gas leasing in the Marine Sanctuary were to go into effect, but were suspended pending further analyses. 11.28
- (3) The discussion on the Future of the Marine Sanctuary without Lease Sale 68 is inadequate (pg. 3-113). The final sentence in this section is erroneous: it ignores the impacts identified in Chapter IV. 11.29

- (4) Section IV.9.a. (pg. 4-96) should state that the potential exists for "high ecological loss" from oil spills and human disturbance of critical nesting and breeding sites. 11.31
- (5) There is no support for the statement (pg. 4-96) that impacts to boating, fishing, diving, other recreation will be minor. The cumulative impacts of degraded water quality, repeated small oil spills and the potential for large spills, degraded air quality, greatly reduced aesthetics, noise, and other impacts may substantially reduce the use of the Marine Sanctuary for recreation. 11.32
- (6) The statement (pg. 4-96) that impacts to cultural resources will be minor is inconsistent with the analysis of impacts to cultural resources (pg. 4-124). This analysis states that even with mitigation, low to moderate risks to marine archaeological resources would exist. 11.33
- (7) The conclusion (pg. 4-96a) that the impacts will be minor, clearly doesn't follow from the impact analysis on the previous page (4-96). The conclusion should state that seabirds, pinnipeds and benthic organisms will sustain "low to moderate ecological loss" and the potential exists for "high ecological loss". Other adverse impacts, such as those from drilling mud discharges would also occur. 11.34
- (8) The impact section on the Marine Sanctuary should discuss degradation of air quality of the Sanctuary and Islands. 11.35

Sewage Outfalls

It is unfortunate that "Sewage Outfalls" were not the proposed project addressed by this document. In the authors' attempt to dismiss the ocean discharges of OCS activities as negligible, they have done an excellent job of discussing the impacts associated with sewage outfalls. The existence of sewage outfalls will not make the discharges from OCS oil and gas activity insignificant; their existence will make the OCS discharges more significant when considered cumulatively. The discussion of Lease Sale 68 ocean discharges should be presented in as much detail, with as much emphasis on the potential negative impacts, as was discussed for sewage outfalls. In the discussion of sewage outfalls under Future Trends, the author omitted the fact that local agencies are proceeding with major efforts to substantially reduce ocean disposal of sewage. The enormous table on sewage outfalls (measuring 30 inches by 12 inches) should be replaced with a table presenting the anticipated discharges from oil and gas activities. In the discussion on sewage outfalls, the document should clearly state that the point of discharge, the chemical form of discharge, the resources impacted from the discharges, and the mechanisms of impact from the discharges are rarely comparable to discharges from oil and gas activities. The comparison of hydrocarbons released from sewage outfalls to those released during oil spills is particularly 11.36

absurd. The discharges of oil and grease from sewage outfalls does not close our beaches and harbors and does not kill thousands of birds and marine mammals as would occur from a major oil spill.

Unemployment

No data is provided on the skill levels of the unemployed or occupational requirements of direct and indirect employment generated by the OCS project. The statement that employment created by OCS project would provide jobs for unemployed in the area is not justified. The project could conceivably encourage immigration into the area in search of jobs and aggravate unemployment.

Cumulative Impacts on the Coastal Economy

Section IV.C.11.d. (pg. 4-102) does not follow from previous discussion. This discussion is more appropriate in the section on coastal land use. Discussion in this section should concentrate on economic ability of local government to provide services to accomodate population generated by OCS Development, discuss relationship of employee requirements to employment availability, and discuss potential constraints in matching supply of and demand for employees given high area housing costs (particularly in Santa Barbara).

Terrestrial Impacts

The document comes to the erroneous conclusion that the terrestrial resources will be negligibly impacted. The analysis of terrestrial impacts omits consideration of land disturbance for operational support bases, expanded public facilities, and pipelines which carry oil and gas to shore and which are used for transshipment of oil and gas. The terrestrial impacts from construction of the proposed Gaviota Supply Base and the cross-county pipeline must be addressed in this document, as these facilities will be constructed to service Lease Sale 68 tracts in addition to tracts leased in other sales. Terrestrial impacts from construction or expansion of onshore storage and treatment facilities must also be addressed. Other terrestrial impacts which are likely to occur include those from oil spills and air quality degradation.

Inefficiency of High Effort Drilling Programs

Recent studies have demonstrated that high levels of drilling effort reduce the efficiency of petroleum recovery and reduce the net yield of petroleum. This occurs because when drilling efforts are high, much more effort is directed toward marginal or unlikely target areas. At high levels of drilling effort, as is planned in the POCS program, as much energy will be used in extracting the oil as will be obtained from the drilling. A lower level of drilling effort would result in a much more efficient drilling program which yields a greater net energy gain. The document should state that high drilling efforts, such as

the POCS program, results in lower efficiency with which industry delivers petroleum to society and reduces the net yield of petroleum.

Vessel Traffic Separation Lanes

The DEIS does not discuss the increased risks of accidents which would accompany exploration and production activities in or adjacent to the vessel traffic separation lanes. The greater risk for oil spills, the greater risk for vessel damage, and the greater risk to human safety must be addressed in the DEIS. The findings and recommendations of the Santa Barbara Channel Risk Management Program (California Coastal Commission, 1981) should be presented in the document.

Onshore Impacts

It is gratifying that the proposed project assumes use of an onshore pipeline to transport crude oil production from Lease Sale 68 tracts in the Santa Barbara Channel. To insure that an onshore pipeline is used to transport crude oil, a stipulation is necessary which requires transport of crude by onshore pipeline whenever feasible. Without this stipulation, the DEIS should evaluate all adverse impacts on the basis of a worst case scenario--crude oil transportation by tanker.

Deep Water Drilling Equipment

The DEIS should describe the availability of equipment (i.e., drilling rigs) relative to the Industry's capability of meeting the anticipated exploration time schedule. Furthermore, the DEIS should discuss the limits to which conventional equipment can be used to explore, develop and produce in deep water tracts. The additional risks associated with accidents in deep water tracts must be discussed, particularly in light of the use of unconventional equipment. The diver capability and availability for use in the case of a blowout or other incidents requiring seafloor operations should be discussed.

Air Quality

The cumulative impacts to Santa Barbara County's air quality are analyzed in a cursory and erroneous manner. Bureau of Land Management may consider OCS air emissions as "insignificant exacerbations of existing air pollution problems", but the County considers OCS oil and gas activities a major detriment to its ability to achieve reasonable further progress toward attaining air quality standards. The DEIS should be revised to fully disclose the cumulative onshore air quality impacts which will occur and to present procedures which will be used to mitigate these cumulative impacts.

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Adequacy of the Alternatives

Guidelines for the National Environmental Policy Act (NEPA) require the preparers of environmental impact statements to consider all reasonable alternatives to a proposed action. The Draft EIS for Lease Sale #68 does not do this. For comparison, the Final EIS on OCS Lease Sale #48, which encompassed essentially the same area as proposed OCS Lease Sale #68, considered 16 modifications to the proposed sale as alternatives, including: deletion of all tracts in the Santa Barbara Channel from the sale, deletion of tracts in vessel traffic separation areas, deletion of tracts north of San Miguel Island, and deletion of tracts in the Channel Islands Marine Sanctuary. Similarly, the Final EIS for OCS Lease Sale #53, which encompassed the area immediately north of the proposed OCS Lease Sale #68, considered 10 modifications to the proposed sale as alternatives, including deletion of all tracts in specific basins (analogous to the Santa Barbara Channel), and deletions of tracts to protect specified fisheries areas, sensitive biological areas and a proposed Marine Sanctuary.

The proposed sale is the only "alternative" evaluated on an issue-by-issue basis in the Draft EIS. Alternatives 2 through 5 are summarized as resulting in a lessening or deferral of impacts described for Alternative 1 (the proposed sale) rather than describing the potential consequences of each alternative on an issue-by-issue basis. Such issue-by-issue analysis for all alternatives is standard in other OCS regions (see, for example, Draft Environmental Impact Statement, Proposed OCS Oil and Gas Lease Sales 67 and 69 (Gulf of Mexico, prepared by DOI/BLM, New Orleans, Louisiana, March 20, 1981, pages 143 through 161)).

The Draft EIS on the proposed OCS Lease Sale #68 provides no explanation for why other alternatives are not described in the text. The "catch-all" Alternative 5 is not a legitimate substitute for this omission. Even though Alternative 5 is represented to allow for any other alternative the Secretary may choose, it does not present the range of possibilities for the Secretary to choose from. The Draft EIS further fails NEPA by neglecting to describe the possible consequences of choosing an alternative that is not described in the Draft EIS. Whatever the purpose in presenting Alternative 5, any pretense that it supplant the range of reasonable alternatives without first describing those alternatives and their consequences is without basis in law or regulation implementing NEPA. The Draft EIS for proposed OCS Lease Sale #68 is incomplete with respect to analysis of reasonable alternatives to the proposed action.

Alternative 2: Tract Deletions to Protect the Channel Islands National Marine Sanctuary

The Channel Islands are recognized by Congress and State and Federal agencies as a unique environment worthy of special and extraordinary protections. To this end, Congress has established the Santa Barbara Channel Islands National Park; the Department of Commerce has established the Channel Islands Marine Sanctuary; and the State of California has designated the offshore waters of the islands as an Area of Special Biological Significance (ASBS) and as a State Oil and Gas Sanctuary. The County concurs with the findings (below) of Congress, the Office of Coastal Zone Management, and others, and concludes that deletion of the tracts in the marine sanctuary is in the national interest.

"Habitat degradation due to low-level disturbance is particularly a problem to populations of pinnipeds on San Miguel Island...The San Miguel Island pinniped population represents over 40% of the world population of northern elephant seals and California sea lions, and the only northern fur seal colony south of Alaska."
(From An Evaluation of the BLM Environmental Studies Plan and Draft Environmental Impact Statement for OCS Sale #53, prepared for the California Coastal Commission by Monterey Aero Services, 1979; pg. 50-51.)

"The national significance of the area is illustrated by the fact that San Miguel Island...is the only location in the U.S. and one of the very few places in the world where breeding populations of 5 species of pinnipeds can be found virtually side by side, with transient individuals of a sixth, the Guadalupe fur seal, also being occasionally sighted."
(From Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, prepared by the Office of Coastal Zone Management, NOAA, 1977; pg. E-13.)

"In order to protect the nationally significant natural, scenic, wildlife, marine, ecological, archaeological, cultural, and scientific values of the Channel Islands in the State of California,...there is hereby established the Channel Islands National Park..."
(P.L. 96-199; March 5, 1980.)

Additional Alternatives that Should be Considered in the EIS

At least three additional "modification" alternatives should be considered in a revised or supplemental Draft EIS:

- (1) modify the sale by deleting of all tracts offered in the Santa Barbara Channel;

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(2) modify the sale by deleting tracts known as the "Buffer Zone" to the Santa Barbara Ecological Preserve set aside by former Secretary of the Interior Mickle;

11.49

(3) modify the sale by deleting all tracts offered in the vessel traffic separation scheme.

11.50a

An analysis supporting these modifications was submitted to the Pacific OCS Office in February 1980 (Santa Barbara County Comments on the Call for Nominations for Proposed Offshore Oil and Gas Lease Sale #68). The County requests that the issues presented at that time be thoroughly addressed.

11.50b

Offshore Processing

The Draft EIS makes two vague references to offshore processing:

"Oil and gas production from the Santa Barbara Channel area is assumed to be transported from offshore platforms to shore by pipelines. Oil is expected to be processed on the platforms; gas, in the offshore processing facility." (Page 1-6, emphasis added.)

"Transportation of the oil and gas is expected to be as follows: Santa Barbara Channel and the Inner Banks-- oil and gas will be processed offshore and piped to shore;..." (Page 2-1, emphasis added.)

Processing of crude oil to pipeline-quality standards is performed at onshore facilities for most of the crude oil produced in the Santa Barbara Channel. Offshore processing of crude oil on fixed platforms, however, is common throughout the Gulf of Mexico, generally because of the distance to shore from production areas and the commingling of produced oil in pipelines. Offshore processing of crude oil on a fixed platform is a part of the Beta field development in the western end of the Santa Barbara Channel.

11.51

Offshore "processing" of natural gas is not common in the Gulf of Mexico or offshore California. Space requirements, safety, and fire hazards have resulted in natural gas processing occurring at onshore locations in all OCS regions of the United States.

The Draft EIS should be revised to explain references to offshore processing. If oil is assumed to be processed offshore, will it be by fixed platform or a floating facility such as by Exxon for the Santa Ynez Unit? If natural gas is assumed to be processed offshore, what precautions are assumed? In either instance, what primary motivation supports offshore processing: choosing a facilities' configuration that optimizes the extraction of oil and gas resources, or circumventing environmental standards that would be required for siting such facilities onshore?

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The greater environmental impacts and risks associated with offshore processing (as compared to onshore processing), including those from space and technological limitations, should be discussed in the EIS.

11.52

The EIS should clarify or correct the meaning of the development assumptions presented in the text cited above and address these. The EIS should also consider the "consistency" of such offshore facilities with the California Coastal Zone Management Program.

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Concluding and Summary Sections

The concluding sections, the impact summary sections, and the DEIS summary provides the reader with a substantial underestimate of the potential adverse impacts. This is because these sections only identify impacts expected under normal operating conditions. The potential for much greater impacts which would occur from low probability incidents must also be identified in these concluding and summary sections. Repeatedly, the document erroneously concludes that significant impacts with a low probability of occurrence are insignificant impacts.

11.55

Response to Comments

The publication of a few paragraphs containing "generic" responses to hundreds of pages of agency and public input (the procedure used by BLM for the Lease Sale 53 DEIS) provides a woefully inadequate response to comments. In the past, BLM has simply ignored the vast majority of comments, making no attempt to respond. NEPA requires, and the County demands, a full response to each of the County's comments.

11.56

Although it may not be BLM's intent, the document is written in a manner which justifies the sale while dismissing significant environmental impacts as negligible. I hope that this bias is not present in the FEIS. We look forward to seeing major improvements in the FEIS in response to these comments.

11.57

Sincerely,

William B. Wallace

William B. Wallace
Chairman

WBW:WAM:km

cc: Deni Green, OPR

Mari Gottdiener, California Coastal Commission

Responses to COUNTY OF SANTA BARBARA,
DEPARTMENT OF RESOURCE MANAGEMENT

11.1 We have reviewed the County's scoping comments again and have included in the FEIS any issues inadvertently omitted from the DEIS.

11.2 Size, timing, and location of sales were considered in developing the proposed Five-Year Leasing Schedule. The Santa Barbara Channel is not the most intensely leased OCS petroleum region. Several comparable sized areas of the Gulf of Mexico have been leased to an equal or greater degree. Looking at OCS Planning Areas, 4 percent of the Southern California region has been leased compared to 14% of the Gulf of Mexico. The EIS has been revised to include this information. Section I.B.2 has been revised to include a discussion of lease sale scheduling considerations.

11.3 The discussion of financing of public services and facilities has been expanded in Section IV.C.13.

11.4-5 As it is difficult to predict the precise size of Proposed Sale No. 68 related population influx and the location of same, we find the use of term "will" is not appropriate.

11.6 Employment estimates for the Space Shuttle and Missile-X projects were obtained from the Department of the Air Force and were the best available at the time. All projections used as inputs to the economic model are uncertain.

11.7 Blaney-Dyett requested population estimates from Santa Barbara County officials for use in the public facilities study. No generally accepted set of estimates was available at that time. Consequently, their analysis relied upon what they determined to be the best data.

11.8 BLM is aware that local communities often have information that would provide far greater accuracy in our projections of future conditions. State and local governments, including Santa Barbara County and concerned individuals, were requested by BLM to review and comment on the Draft Blaney-Dyett Report (April 2, 1981) so that projections and assumptions used included the best available data. All review comments were considered in the preparation of the final report.

The land use sections of the EIS are revised to provide a better understanding of the existing constraints within the housing market in the area. There is no information available on the specific magnitude, character and location of the population associated with this proposal (direct and induced). The location of any new population will be influenced by a number of factors including the location of the "secondary" employment, local conditions (housing costs, public services, . . .), and public policy within the local jurisdictions. The EIS, appendices and technical papers are not planning documents and should not be used for local planning decisions. Until investment occurs as a result of the proposed Sale, the magnitude and location of the secondary effects will remain unknown, and the projections in the EIS speculative. Secondary effects account for the majority of the projected impacts related to the proposed Sale.

11.9 Sections III.D.3 and IV.C.14 have been revised as appropriate.

11.10 Section IV.C.14 has been revised to more thoroughly address this concern.

11.11 Comment noted.

11.12 Section 8(g) of the OCS Lands Act, as amended, provides for discussion between DOI and the affected State concerning "drainage" tracts. Consultation is discussed in Section I.B.2. An additional stipulation planned to be published with the Final Notice of Sale will pertain to the location of wells in relation to the boundary of the State tidelands as agreed upon by California and the Department of the Interior.

11.13 Bonner and Moore (1980) indicate that the North Slope (Alaskan) crude has properties of 27.2° API and 1.05% sulphur. The average properties for Proposed Sale No. 68 crude is estimated at 24° API and 2.5% sulphur (POCS Technical Paper No. 81-1). Bonner and Moore stated, "Production, for the purpose of this analysis, is classified as 'heavy' (18.4° API or below) and 'light' (18.5° API and above)." Proposed Sale No. 68 crude should be classified as light and doesn't contain a high percentage of sulfur. Proposed Sale No. 68 crude could be processed in the Los Angeles basin refineries without refinery modification (POCS Technical Paper No. 81-1). However, modification to the refineries could make Proposed Sale No. 68 crude even more competitive. Bonner and Moore summarized their study on the California refineries for 1985: ". . . the prospective 1985 refining industry uncertainties are so great that

- they may well inhibit needed investments from being made. The greatest investments will be required for overcoming uncertainties surrounding the availability of foreign crude oil and natural gas supplies. Further restrictions on the sulfur content of industrial fuel oil will also require substantial new investments. Refining the potential increased volumes of new California crude oil production is the possible future event that the industry can most easily assimilate." There is a possibility that Proposed Sale No. 68 crude could be, as stated, transported to other areas of the United States or foreign countries. Our oil spill analysis did consider the transportation system as outlined in POCs Technical Paper No. 81-1 and did consider any "backout" of Alaskan or foreign tankering. From Sale No. 53 experience, we decided to employ only two transportation scenarios for Proposed Sale No. 68. Both scenarios transported crude from the source to the Los Angeles basin refineries. Increased tankering of oil to areas outside of the Sale area may increase the risk of oil spills but not necessarily within the Sale area.
- 11.14 The question of leasing in the Adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone) is addressed in the FEIS as Alternative 3.
- 11.15 The EIS has been revised as suggested.
- 11.16 Section I.B.3 has been revised as suggested.
- 11.17-19 EIS has been revised to include a discussion of Alternative 3.
- 11.20-26 The EIS has been revised as appropriate in Section IV.A.1. A list of Clean Sea's equipment is an appendix to the California Coastal Commission, Preliminary Draft Oil Spill Response Capability Study, Phase I: Clean Seas (April 1981) and also appended to the FEIS as Appendix H.
- 11.27 Comment noted.
- 11.28 Comment noted. The amount of oil and gas resources in the Sanctuary that will be drained from drilling on adjacent tracts is not known because 1) the final regulations concerning slant drilling in the Marine Sanctuary have not been clarified, and 2) the geologic structure may preclude recovery of most of the resources by slant drilling. Also see response 11.12.
- 11.29 Section I.B.8 has been revised as suggested.
- 11.30 The EIS has been revised as suggested.
- 11.31 Section IV.C.9 has been revised as suggested.
- 11.32 This section relates to impacts from Alternative 1 only. Cumulative impacts are presented in Section IV for all affected human and biological resources.
- 11.33 The first statement refers to potential impacts within the marine sanctuary and the second statement to potential impacts throughout the lease area. The relative value of each statement is the same given the area of concern.
- 11.34 The EIS has been revised as appropriate.
- 11.35 The actual air quality impacts on the sanctuary and islands depend on the exact locations of future platforms and their distance to the areas of concern. The predicted platform locations provided by USGS, as shown in Figure II-1 of POCs Technical Paper 81-7, are approximately 10-15 miles away from the sanctuary and islands. Based on the modeling results for onshore areas, the air impacts at such a distance are not significant and would not cause any violation of federal standards in these areas (except for ozone which, in some cases, is probably higher than the standards at the present time). Additionally, Alternative 2 summarizes the significant impacts that would be mitigated or would not occur if the tracts within the marine sanctuary area are not leased.
- 11.36 The comparison of OCS discharges with municipal sewage discharges was just that, a comparison. It was not meant to imply that the impacts from OCS discharges were "negligible" in all areas but that for areas where municipal discharges are heavy, the OCS contribution to several of the parameters included in the table are negligible. The EIS will be revised to clarify this point. The contention that oil and grease from sewage outfalls does not close beaches is true but it should be pointed out that unregulated municipal sewage discharges, such as occur during heavy storm runoff, do close beaches. Anticipated impacts of oil spills on marine mammals and seabirds are discussed in Section IV.C.6.
- 11.37 The impact of OCS-related jobs on unemployment rates has been added to the discussion in Section IV.C.11.
- 11.38 Sections IV.C.12 and 13 discuss the fiscal impacts of growth as well as the uncertainty of the effects on unemployment rates. Section IV.C.14 is revised to more completely address the housing issue.

- 11.39 The EIS has been revised to more fully address impacts to terrestrial resources
- 11.40 No studies have been received by BLM that indicate a net loss in petroleum reserves because of high levels of drilling activity. What can occur with the expansion of exploration in promising areas is a decline in the marginal rate of petroleum discoveries, not a decline in quantities of petroleum. To maximize the marginal rate of petroleum discoveries on the Southern California OCS, all leasing activities should occur in the most promising area of the OCS, the Santa Barbara Channel.
- Future references to studies should include a citation, indicating the title, date of publication, and source. Provision of this information would allow BLM to evaluate the data used in the study and, when applicable, improve the quality of our documents.
- 11.41 The FEIS has been revised to adequately address cumulative effects of OCS oil and gas activities on vessel traffic. As of this writing, the final version of the Santa Barbara Channel Risk Management Program (California Coastal Commission, 1981) was not available.
- 11.42 BLM cannot stipulate construction of pipelines onshore since this is under State and local control. As indicated in the EIS, the estimated number of oil spills will not change significantly if oil from the Santa Barbara Channel is tankered to shore rather than piped ashore.
- 11.43 The industry has the capability to explore, develop and produce in the Proposed Sale No. 68 tracts with current technologies. The industry must also comply with OCS Order No. 5 regarding use of best available and safest technologies. The industry periodically assesses its abilities to meet the energy needs of the nation and presents analyses of new technologies. For detailed information reference the following industry journals: Offshore Magazine, Oil and Gas Journal, and Ocean Industry.
- 11.44 Environmental Resource Group (ERG), under contract to BLM, developed an extensive Proposed Sale No. 68 air quality analysis report. This report is available in Technical Paper No. 81-7. The impacts discussed in this report and the EIS are cumulative.
- As stated in the EIS, "The Department will require additional controls on sources that may cumulatively have a significant impact." USGS is responsible for implementing the Department of Interior's air quality regulations under 30 CFR 250. Because the specific information on these additional controls is not currently available, they have not been included in the Proposed Sale No. 68 air quality analysis.
- 11.45 We have reevaluated the alternatives to Proposed Sale No. 68. The FEIS includes three new alternatives. A summary of the impacts is provided in Section II and topic-by-topic analyses of the alternatives are provided in Section IV. BLM has considered alternatives to delete all tracts in the Santa Barbara Channel and tracts north of San Miguel Island, and has decided that there is not sufficient justification for including these alternatives in the EIS. However, as has occurred in previous sales, the Secretary of the Interior may choose to delete any combination of tracts he deems appropriate.
- 11.46 Comment noted.
- 11.47 Populations of elephant seals, northern fur seals and California sea lions have been stable or growing during the last 10 years.
- 11.48 BLM has considered this recommendation and decided that there is not sufficient justification for including in the EIS an alternative to delete all tracts in the Santa Barbara Channel. However, as has occurred in previous sales, the Secretary of the Interior may choose to delete any combination of tracts he deems appropriate.
- 11.49 The Adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone) is discussed in FEIS as Alternative 3.
- 11.50a In response to the USCG's recommendation to delete Tract 165, we have included Alternative 5 (see II.B.5). Consultation concerning other tracts in the VTSS will continue on a case-by-case basis after the proposed lease sale.
- 11.50b We have reviewed the referenced letter again. These issues are addressed, as appropriate, in the EIS.
- 11.51-53 The following assumptions were made for the Proposal:
- 1) Each offshore platform would have the capabilities to drill and process the crude oil. A second (processing) platform could be installed; however, we assumed that processing would occur on the same platform;
 - 2) Gas from the Santa Barbara Channel area would be processed onshore;

- 3) Gas from the Inner Bank area would be processed on the platform; and,
- 4) Gas from the Outer Bank area would be reinjected.

It is unlikely that another OS&T would be installed. The number and variety of options as to type and method of development available precludes a discussion at this time. A detailed analysis of the method for offshore oil and gas processing is required at the time of permit application.

11.54 The development scenarios presented in the EIS are hypothetical situations. Consistency determinations are only made on actual proposals.

11.55 Sections III.C.4, III.D.3 and IV.C.14 addressing land use impacts are revised to emphasize the potential impacts on housing.

Other sections of the EIS have been revised as appropriate.

11.56 The County of Santa Barbara is mistaken. BLM responds to each comment whenever possible. The number of comments on the Sale No. 53 DEIS prohibited detailed responses in the FEIS. Since the number of comments on the Proposed Sale No. 68 DEIS is less, we have responded to them to the maximum extent possible in the FEIS.

11.57 Comment noted.

RESOURCE MANAGEMENT AGENCY
county of ventura

Planning Division

Dennis Davis, AICP
Manager

John Lane
August 12, 1981
Page 2

August 12, 1981

John Lane
Bureau of Land Management
Pacific Outer Continental Shelf Office
1340 West Sixth Street, Room 200
Los Angeles, CA 90017

Dear Mr. Lane:

Subject: Comments on Draft Environmental Impact Statement (DEIS) "Proposed
1981 Outer Continental Shelf Oil and Gas Lease Sale Offshore
Southern California - OCS Sale No. 68"

We would like to take this opportunity to provide these written comments on the subject draft report. After reviewing the Draft EIS and participating in the Public Hearings held last month, Ventura County has compiled the following recommendation and comments.

Ventura County recommends that the Department of Interior lease only the areas indicated in Alternative 2 - Modify the Sale by Deleting Tracts to Reduce Potential Conflicts with the Channel Islands Marine Sanctuary (Attachment 1). Ventura recommends that no drilling take place on any portion of the 37 tracts consisting of 13 complete and 24 partial tracts located within the sanctuary for these reasons. The draft report acknowledges that these tracts contain less than three percent of the total oil and gas resources estimated for the entire L.S. #68 proposal. The draft also states that "Deleting [these tracts] will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours." (p. 2-15) And further, adopting Alternative 2 would help maintain the characteristics and qualities that were prime reasons for designating the Northern Channel Islands as a National Marine Sanctuary and National Park." (p. 2-16) Thus, Alternative 2 appears to be the least environmentally damaging at virtually no cost.

Ventura County is aware of the positive economic impacts this lease sale will have; however we feel it is vitally important for the Department of Interior to be aware of the negative impacts this sale will likely have on Ventura County's ability to provide public services to additional OCS-related populations. Ventura County has adopted two federally required regional management plans which contain population projections to the year 2000. These are the Air Quality Management Plan (AQMP), and the "208" Areawide Waste Treatment Management Plan. Any significant population changes due to OCS and related activity may not be able to be accommodated by these projections.

Comments regarding the air quality impact analysis prepared for the subject DEIS were submitted by staff of the Ventura County Air Pollution Control District on April 22, 1981 (Attachment 2). In that letter, staff raised the following concerns: adequacy of the cumulative impact analysis, adequacy of the reactive pollutant modeling, lack of a cumulative emission inventory for sources in the Santa Barbara Channel and differences between the Lease Sale 48 FEIS and the subject DEIS in terms of resource estimates. It appears that these concerns were not addressed in the final air quality report (Air Quality Impact of Proposed OCS Sale No. 68 Offshore Southern California, POCS Technical Paper No. 81-7), nor in the Draft EIS. The Final EIS should address these concerns.

On July 21, 1981, the Ventura County Board of Supervisors adopted a set of policies applicable to the control of air pollutant emissions for offshore petroleum production operations (Attachment 3). It is recommended that the Final EIS for OCS Sale No. 68 incorporate these policies as air quality mitigation measures.

Again, we appreciate the opportunity to provide you with these comments and hope they will assist you in processing OCS Lease Sale #68.

Sincerely,

RESOURCE MANAGEMENT AGENCY

Kim Hocking for DD
Dennis T. Davis, AICP
Manager, Planning Division

VRH:sP40m

Attachments

cc: Board of Supervisors
Chief Administrative Officer
California Coastal Commission
California Air Resources Board
Office of Planning and Research
Santa Barbara County APCD

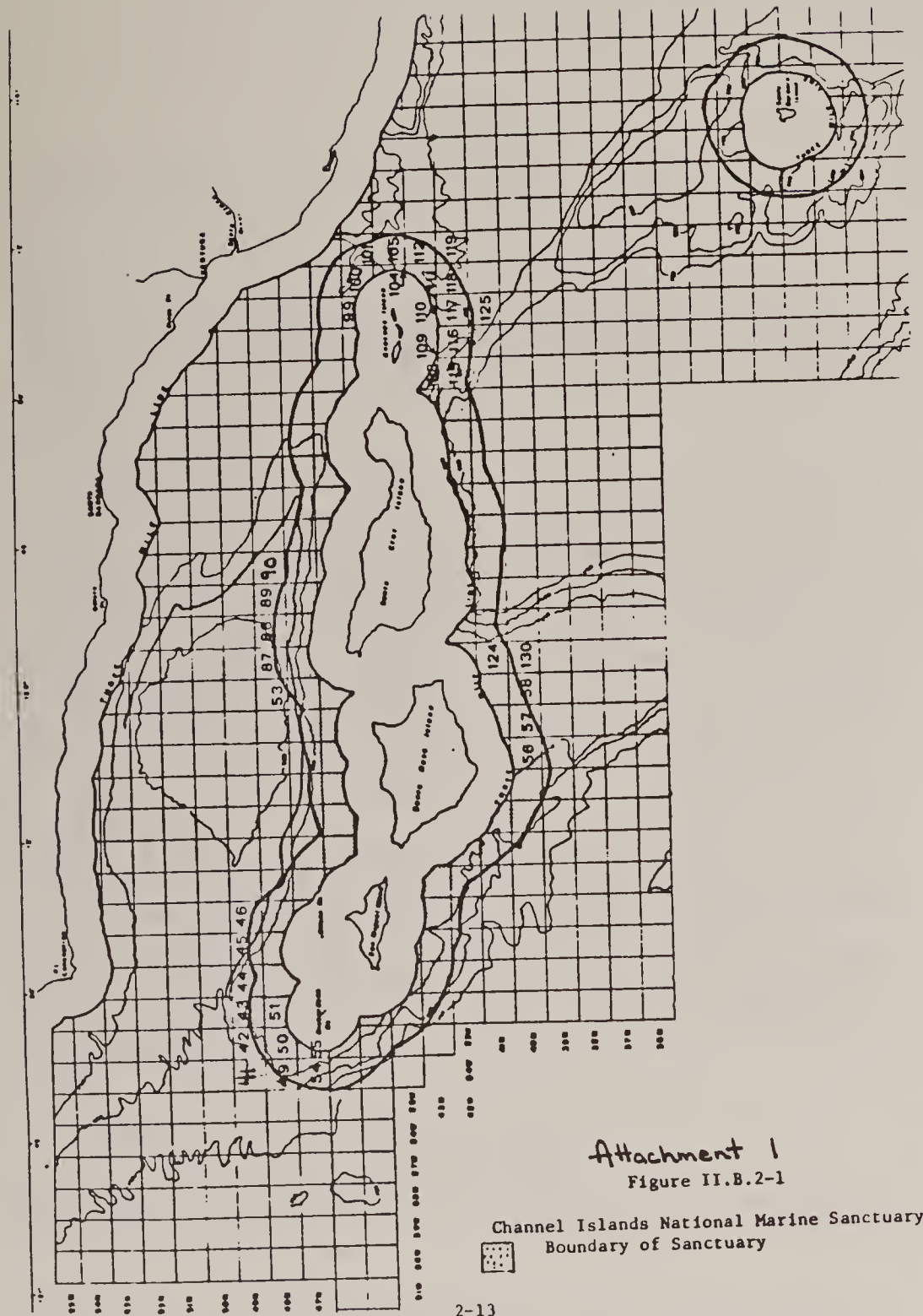
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RESOURCE MANAGEMENT Attachment 2 county of ventura

Air Pollution
Control District

Jan Bush
Air Pollution Control Officer

April 22, 1981

John Lane, Environmental Assessment Chief
Bureau of Land Management
Pacific OCS Office
1340 W. Sixth Street, Room 200
Los Angeles, CA 90017

Subject: Draft Air Quality Analysis of the Potential Impact of OCS Lease Sale No. 68 Offshore Southern California.

Dear Mr. Lane:

The Ventura County Air Pollution Control District (VCAPCD) staff has reviewed the subject document. As we have indicated on several previous occasions, our primary concern with petroleum industry activities in the Santa Barbara Channel area is that the emissions of nitrogen oxides and volatile organic compounds from these activities may contribute significantly to the photochemical oxidant (ozone) problem in Ventura County. The environmental impact statement on a lease sale is one of the few documents in which a cumulative analysis of all petroleum industry activities can reasonably be done. It is unfortunate that the subject document does not contain a much more complete cumulative analysis.

12.5

The discussion of cumulative impact in the subject document is confined to the section on modeling of reactive pollutants and the appendices supporting this section. The VCAPCD staff, however, is concerned that the reactive pollutant modeling used in the report does not adequately assess the potential impact of these sources.

12.6

Reactive Modeling

The VCAPCD staff questions what information can be derived from examining the reactive modeling results presented in the subject document. An increase in measured ozone levels of only 1 or 2 ppm due to offshore petroleum development would be considered extremely significant as the ozone standard is 12 ppm. It is not clear that the resolution of the model used in this report is that fine.

12.7

The authors of the report state that a computer model may be accurate within a factor of two. This may be correct if one is referring to the relationship between a predicted ozone level and a measured ozone level. It does not follow, however, that this degree of accuracy is applicable to the relative differences between a computer baseline run and a run with additional emission sources included. None of the model applications described in Appendix B as "verifications" of the model tested its precision in predicting small differences.

12.8

The VCAPCD staff also questions one of the basic assumptions used in the reactive modeling. In Appendix B, the authors state that the initial conditions dominate the production of ozone. The authors relate initial conditions to local emission inventories for trajectories that start onshore. For trajectories that start offshore,

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however, the initial conditions are kept the same for all runs. Although this assumption may be reasonable, it also seems reasonable that offshore initial conditions may be related to the offshore emission inventory. If this assumption were used, the results of the modeling would be altered significantly.

Finally, the authors state that the many assumptions used in the reactive modeling are "conservative". It is assumed that this means the assumptions tend to maximize ozone levels during each run. Since, however, one of the primary reactions in the reactive modeling, according to the authors, is ozone scavenging by nitrogen oxide, it is unclear whether the assumptions are conservative or not.

The VCAPCD staff concludes that the reactive modeling in the subject report is inconclusive.

Emission Inventory

Because the VCAPCD staff questions the usefulness of the reactive modeling done for this report, the need to examine the emission inventory in the subject document increases in importance. The relative amount of emissions from a project is, at least, an indication of the potential impact of the project. The emission factors and process rate assumptions used to compile the emission inventory are fairly consistent with those used by the VCAPCD staff. If anything, they result in higher emissions than would be derived by the VCAPCD. Unfortunately, the emission inventory is compiled only for sources assumed to be associated with Lease Sale No. 68. No cumulative emission inventory for all petroleum activities in the Santa Barbara Channel is developed.

The VCAPCD staff has recently compiled such an inventory. The Lease Sale No. 68 scenario developed by the VCAPCD staff assumes 5 new platforms installed on pre-Lease Sale No. 48 leases, 5 new platforms on Lease Sale No. 48 leases and 5 new platforms on Lease Sale No. 68 leases. This compares to the estimates in the subject document (Appendix C) of 8 new platforms installed on pre-Lease Sale No. 48 leases, 2 new platforms on Lease No. 48 leases and 2 new platforms on Lease Sale No. 68 leases. Thus, the two scenarios are roughly consistent in terms of total platforms. The VCAPCD staff concludes, on the basis of its inventory, that petroleum industry activities in the Santa Barbara Channel area may contribute significantly to the photochemical oxidant (ozone) problem in Ventura County. As one illustration, the inventory indicates that in 1987, nitrogen oxide emissions from petroleum industry activities beyond the three mile limit alone will be approximately 4,400 tons per year. This is extremely significant when compared to the goal in the 1979 Ventura County Air Quality Management Plan to reduce nitrogen oxide emissions in Ventura County to 2,800 tons per year by 1987.

Miscellaneous Comments

The EIS for Lease Sale No. 48 estimated that 10 new platforms might be built in the Santa Barbara Channel as a result of that sale. The subject document assumes 2 new platforms as a result of Lease Sale No. 48 and 2 new platforms as a result of Lease Sale No. 68. As very little exploratory activity has occurred in the Santa Barbara Channel since Lease Sale No. 48, it is hard to understand the basis for such a

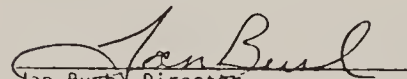
reduced estimate. Since the resource estimates significantly impact the air quality analysis, the basis for the new resource estimate should be discussed in the Lease Sale No. 68 EIS.

The projected emission inventory for Ventura County in the subject document was apparently derived from the data in Appendix A and L of the 1979 Ventura County Air Quality Management Plan. The inventory so derived is a projection of the inventory for Ventura County assuming no new controls were adopted in the 1979 AQMP. It is significantly larger than the projected emission inventory which results from adoption of the 1979 AQMP.

If you have any questions on this matter, please contact Mr. Karl E. Krause of my staff at (805) 654-2665 (ATSS 723-2665).

Sincerely,

RESOURCE MANAGEMENT AGENCY


Jan Bush, Director
Air Pollution Control District

JB:KK:lw/a863

cc: California Air Resources Board
Office of Planning and Research
Santa Barbara County APCD

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AIR POLLUTION CONTROL POLICIES RELATED TO OFFSHORE OIL ACTIVITY

On July 21, 1981, the Ventura County Board of Supervisors adopted the following policies related to the control of air pollutant emissions for offshore petroleum production operations. These policies will guide local district decisions for offshore development that occurs within the district's jurisdiction and serve as guidelines for consistency determinations for projects proposed for areas outside the jurisdiction of the local district.

The policies:

- 1) Encourage onshore processing of all crude oil and natural gas produced offshore when economically feasible. Because there are fewer space constraints onshore, installation of control equipment is less of a problem onshore than offshore. Consolidation of processing facilities onshore may also improve the economics of air pollution control equipment or process changes that reduce air pollution.
- 2) Require the installation of the best available control technology for control of emissions of total organic gases, nitrogen oxides and sulfur dioxide from production and processing operations that must take place offshore. Control technology equivalent to that required for similar onshore operations should be required for all offshore operations in the Santa Barbara Channel.
- 3) Require all offshore crude oil production in the eastern portion of the Santa Barbara Channel be transported to refineries by pipeline, and strongly encourage the construction of a pipeline to transport crude oil from the remainder of the Santa Barbara Channel to refineries.
- 4) Require that before the amount of crude oil being loaded at any marine terminal increases, there must be a commitment to install a vapor recovery system certified by the Coast Guard for that marine terminal.
- 5) Encourage the use of the least polluting power generating source for drilling, pumping, and gas compression operations for new production platforms and onshore processing facilities, and require affected oil companies to inform the APCD of the reasons for applicable decisions.
- 6) Encourage oil companies with operations in the Santa Barbara Channel to consolidate support boat operations whenever and wherever feasible.
- 7) Require that all emissions of reactive organic gases or nitrogen oxides from new or modified petroleum operations in the Santa Barbara Channel which have an impact on Ventura County be offset using emission allocations from the Ventura County Air Pollution Control District or be offset by emission reductions from other sources in the Santa Barbara Channel area.
- 8) Encourage cooperative and consolidated use of pipelines where feasible.

For additional information, call Janet Lyders, 654-2798.

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|--------|--|
| 12.1-2 | Comments noted. |
| 12.3 | These comments are addressed in detail in responses 12.5-6 to 12.14. |
| 12.4 | Chapter III of POCS Technical Paper No. 81-7 discusses applicable Federal, State and local regulations. These recent (July 21, 1981) Ventura County Air Pollution Control policies were adopted after the paper was completed. These policies, which include consolidation of processing facilities and supportive activities, application of Best Available Control Technologies on emission sources, transfer of oil from the channel by pipeline, and emission offsets, clearly could result in further reductions in the potential emissions and impacts associated with offshore oil and gas activities. |
| 12.5-6 | POCS Technical Paper 81-7 is the most comprehensive offshore air quality analysis to date for southern California and considered the potential cumulative impacts of onshore ambient air quality which could result from existing, currently proposed and projected platforms. Table C-3 in the study lists emissions estimated for these platforms. The impact assessment section (Section IV) attempts to develop a worst-case meteorology, maximum likely number of platforms that can effect an air trajectory, and the maximum amount of emissions per platform. In an inert modeling effort, due to the distances of the platforms from each other and the shore, and the nature of worst-case meteorology (low winds, high stability), cumulative impacts are not an issue. |
| 12.7-8 | The air quality analysis uses the most advanced reactive modeling techniques currently available. However, it should be noted that the level of resolution of existing models is not very fine. Due to the lack of adequate data on offshore meteorology, and inherent uncertainties associated with resource estimates (and consequently estimated emissions) and platform locations, a validation of the model at this time would not be meaningful. As stated in the report, the pattern of the results from the modeling effort is more significant than any single value. |

12.9 For initial offshore conditions, the only known offshore data were used for model calibration. These offshore data were adjusted to obtain an onshore concentration equal to an historic worst ozone day. This initial offshore condition was kept the same for the prediction of future concentrations. These initial data were also used for future predictions due to the uncertainty and inadequacies of projections for future offshore air quality. Although it can be predicted that there would be more offshore emissions in the future, it should also be noted that less onshore emissions are projected to occur (VCAQMD). The decreased onshore emissions would affect offshore future air quality. Therefore, the exact decrease or increase in the assumed existing offshore initial condition cannot be predicted with a high level of accuracy.

12.10-11 In developing worst-case emission scenarios for reactive modeling, an attempt was made to identify a one-hour timeframe in which the highest amounts of hydrocarbons and nitrogen oxides would be emitted from the proposed facilities. Generally, the emphasis was on maximizing the hydrocarbon emission rates rather than the nitrogen oxides. Therefore, the emission inputs to reactive modeling are reasonable worst cases. However, it could be possible that higher levels of ozone may be predicted in a small percentage of the trajectories by reducing the estimated amount of NO_x . But it should be noted that a reduction of NO_x emissions does not necessarily increase the predicted ozone levels. Based on the ratio of hydrocarbon levels to NO_x emissions and the location and time of injection of NO_x emissions into the assumed trajectory, the predicted ozone levels may increase or decrease. Furthermore, in many of the worst hour emission scenarios, it is not possible to change the amount of NO_x emissions because they are assumed to be emitted from continuous sources on the platform.

12.12a Ventura County APCD states that the emissions inventory deals only with Proposed Lease Sale No. 68 platforms ignoring a cumulative inventory for all petroleum-related activities in the Santa Barbara Channel. For the purposes of modeling emissions from existing platforms, currently-proposed platforms, facilities projected to be built as a result of other lease sales, and Proposed Lease Sale No. 68 platforms were estimated (Appendix C). Thus, for air trajectories which passed over the Santa Barbara Channel, emissions from existing and projected platforms were included if they were within the path of the trajectory (within 5 kilometers of the centerline of the trajectory).

12.12b The comment by Ventura County APCD states that, based on their own OCS emissions inventory, OCS activities will contribute to the ozone problem in Ventura County. Based on ERG's study and considering the specific resource estimates and platform locations provided by BLM, and utilizing advanced photochemical computer modeling currently available, it was concluded that cumulative impacts (OCS activities, the space shuttle, and/or the LNG terminal) may result in either a decrease in ozone levels in Ventura County or an increase of 3.1 pphm in a worst case. It should further be noted that it is difficult to predict the impact of nitrogen oxide emissions upon ozone strictly from an emissions inventory as Ventura County APCD attempted to do. Finally, the projected emission inventories are difficult to compare since resource estimates, emission factors, power generation requirements, transportation scenarios, operational parameters, and technical assumptions will likely differ.

12.13 The air quality impacts, as well as the cumulative impacts for all human and biological resources discussed in the EIS, are based upon the most recent information from USGS. The decrease in the estimated number of platforms resulting from Sale No. 48 results from two factors. Only approximately one-third of the total tracts offered in Sale No. 48 were leased. The original estimate was based on the assumption that all tracts would be leased and all resources developed. In addition, exploration on tracts in the vicinity of the tracts leased in Sale No. 48 have yielded the formulation of new resource estimates in the area.

12.14 At the time of the draft report, the most recent data available were used for compiling the emissions inventory for Ventura County. Since that time however, new information has been obtained (Ventura County APCD's Final Report, Air Quality Management Plan). Specifically, revised emissions were included for reactive hydrocarbons and nitrogen oxides assuming Reasonably Available Control Measures (RACM's). While this revision reduced the emissions in the Ventura County emissions table (Table V-14), the amount of change in the table comparing Proposed Lease Sale No. 68 emissions with those in the adjacent onshore areas (Ventura and Santa Barbara Counties) was insignificant.

MARINE MAMMAL COMMISSION
1625 EYE STREET, N. W.
WASHINGTON, DC 20006

7 August 1981

Mr. William E. Grant
Manager
Pacific OCS Office
Bureau of Land Management
1340 West 6th Street
Los Angeles, California 90017

Dear Mr. Grant:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the "Draft Environmental Impact Statement (DEIS) for the Proposed 1982 OCS Lease Sale No. 68 Offshore Southern California", and offers the following comments on the sections of the DEIS bearing upon the conservation and protection of marine mammals and their habitat.

Page 1-17, last paragraph: This paragraph indicates that the Bureau of Land Management and the U.S. Geological Survey are consulting with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, as required by the Endangered Species Act, to ensure that the leasing and exploration phases of Sale No. 68 are not likely to jeopardize the continued existence of endangered or threatened species, or to destroy or adversely modify the critical habitat of such species, and that the USGS will reinitiate consultation, as needed, if any development and production activities result from the sale. The DEIS considers the possible impacts from development and production, as well as leasing and exploration, and concludes (pp. 4-77 and 4-78) that "as a result of Sale No. 68 impacts, the expected ecological losses to the marine mammals and seabirds of this area should be low ...". The rationale for limiting the "Section 7" consultations to the leasing and exploration phases, while including consideration of the possible impacts of development and production activities in the DEIS, is not self-evident and should be explained. In this context, the last sentence in paragraph g presumably would be more accurate

if it was rephrased to read something like: "USGS will reinitiate consultation if exploration indicates any development potential and a supplemental DEIS will be prepared if needed".

Page 1-18, last paragraph: This paragraph notes that BLM will consider environmental monitoring studies for the areas leased as a result of the sale and that each area will be evaluated on a case-by-case basis to design an effective monitoring program responsive to management questions. The need for an effective monitoring program is self-evident, given the uncertainties concerning the possible direct and indirect effects of activities and events that would or could be associated with exploration, development, and production of oil and gas resources in the Southern California Bight. The Bureau presumably will identify monitoring needs, in consultation with appropriate Federal as well as state officials, and design the programs to take the maximum possible advantage of related programs being conducted or planned by other Federal agencies, state agencies, and industrial/academic/private organizations. Therefore, this paragraph might be rewritten and expanded as follows:

"BLM will consider and, as necessary, implement environmental monitoring studies for the areas leased as a result of the Sale. Each area will be evaluated on a case-by-case basis to design an effective monitoring program responsive to management questions. Special monitoring studies may be required for areas or species identified as having special aesthetic, biological, or resource value. Appropriate state and Federal officials will be consulted, on a continuing basis, to help identify monitoring needs and design the most effective program possible. BLM will keep the state and other interested parties informed of the results of the monitoring program. ..."

Page 2-4, last paragraph: The last two sentences in this paragraph state that: "Projections as to the number of oil spills to result from Sale No. 68 activity are very low ... (and that) ... these probabilities indicate that Sale No. 68 impacts on marine mammals and seabirds of the SCB will be low." Although it is true that the projections indicate that the probability of an oil spill is low, it does not necessarily follow that the impacts from a spill, which does occur, also will be low. Thus, this and other sections of the EIS (e.g., pages IV, 4-77, 4-78, 4-79, 4-80, and 4-85) should be corrected to indicate that, while the probability of an oil spill is low, any spill that does occur could have significant adverse impacts on marine mammals, seabirds, and other components of marine communities in the Southern California Bight.

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Pages 3-60 - 3-64: This section of the DEIS provides a good summary of available information on the marine mammal and seabird populations in the Southern California Bight. Figure II-3 ("Areas of Special Biological Significance to the Marine Mammals and Seabirds of the Southern California Bight") in the draft final report for the BLM-supported study of the seabirds and marine mammals of the SCB (Dohl, et al., 1980) would provide an informative and useful addition to this section or the section of the DEIS beginning on page 3-68 ("Sensitive Biological Areas").

Page 3-61, paragraph 2: This paragraph states that: "Populations of the California sea lion and the northern elephant seal are now healthy and growing ...". It should be noted (in a footnote, perhaps) that there is some question as to whether the California sea lion population is growing or stable at present (see Jehl and Cooper, 1980, for example).

Page 3-61, last paragraph: The third sentence in this paragraph states that: "No Steller sea lions were observed in 1980". Stewart (1980) reported that fewer than 10 individuals, including 2 pups, were seen in 1980. Thus, the aforementioned sentence should be revised to read something like: "Fewer than 10 Steller sea lions, including 2 pups, were observed in 1980 (Stewart, 1980)".

Page 3-110, paragraph 1: This paragraph should be revised to reflect the comments on paragraphs 2 and 3 of page 3-61. The last sentence should be revised to read something like: "Assuming that this population trend continues, more Guadalupe fur seals could be observed and a breeding colony could be established in the SCB in coming years."

Page 3-110, paragraph 2: The statement that each SCB population is considered to be healthy is not supportable and should be deleted or qualified. In the case of Tursiops and Delphinus, Dohl, et al. (1980) point out that there are morphologically, distinguishable forms in the SCB. These forms are so different as to have been called different species in the past (D. delphis/bairdi and T. gilli/truncatus). The assessments reported by Dohl, et al. made no attempt to consider these forms or populations separately. The inshore population(s) of Tursiops, especially, may be quite limited in size and range and the effects of removals for scientific research and public display prior to enactment of the Marine Mammal Protection Act have not been assessed. The same is true for the two or more populations of pilot whales in the area. Thus, in the absence of information on the ranges, sizes and recruitment rates for the separate forms or populations, the status of these populations should be listed as "unknown" or "uncertain".

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Page 3-111, paragraph 3: This paragraph states that: "Studies are currently being conducted by the FWS to determine the feasibility of transplanting a portion of the sea otter population to San Nicolas Island." While this statement is correct, it should be noted that the Service's consideration of potential transplant sites is not limited to San Nicolas Island.

13.9

Page 4-7, paragraph 2: The first sentence in this paragraph states that: "The probability of oil spill occurrence is based upon the fundamental assumption that realistic estimates of future spill frequencies can be based on past OCS experience." Since most of the past OCS experience has been in the Gulf of Mexico, a seismically inactive area, it seems that the "fundamental assumption" is of questionable validity for a seismically active area such as the Southern California Bight. Thus, the validity of the "fundamental assumption" should be examined and, if necessary, the probabilities of various types and sizes of oil spills should be recalculated.

13.10

Pages 4-10 - 4-15, Tables: These tables list the probabilities of oil spills, of various sizes, contacting certain areas in and adjacent to the proposed lease sale area. From the information provided, it is not clear whether the assessment of spill trajectories takes account of seasonal variation in winds and currents. Marine mammals, as noted on page 2-4 of the DEIS, may be more vulnerable to oil spills at certain times of the year (e.g., during the pupping/breeding season) and, if the oil spill risk model does not take account of seasonal variation in winds and currents, marine mammals could be subjected to greater or lesser risks than those indicated.

13.11

Page 4-25, paragraphs 3 and 4: The first sentence in paragraph 3 notes that there are little data on the effects of oil on marine mammals. Although the statement is true, there are more data than are discussed. The publications listed in Attachment 2 to this letter should be reviewed and incorporated into the discussion. In addition, it should be noted that the Bureau's Alaska and New York OCS Offices currently are supporting relevant studies and that the results of these studies may eliminate many of the uncertainties concerning the possible effects of noise and oil on cetaceans and other marine mammals. Preliminary results from some of these studies are available and could be included in the discussion.

13.12

Pages 4-25 - 4-26 (Ecosystem Effects): The definitions in this section are not very precise and, in some cases, are confusing. As an example, an impact that results in a species or species assemblage becoming extinct more appropriately would be described as a catastrophic or irreversible impact rather than a "severe impact". We suggest that you consult with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and such state agencies as may be appropriate to develop a more precise and useful set of definitions.

Pages 4-76 - 4-82: This section of the DEIS presents and discusses information concerning the possible impacts of oil spills, that could occur as a result of the proposed action, on marine mammals and seabirds. The assessment does not consider the impacts of contaminants, other than oil, and is not as complete as it could be. Table II-1 in Dohl, et al. (op. cit.), for example, provides an annotated list of marine mammals and seabirds known to be especially vulnerable to impact associated with oil and gas production on the Outer Continental Shelf and should be referenced, if not included, in the discussion. In this same context, the information in Figure II-3 from Dohl, et al. can be combined with the information in Table IV.A in the DEIS to estimate the probabilities that one or more spills will occur and impact an area of special biological importance to marine mammals and seabirds (see below).

Probabilities (in percent) of One or More Spills
Occurring and Contacting an Area of Special
Biological Importance to Marine Mammals and Seabirds

Major Marine Mammal/ Seabird Habitat Areas	Spills 1000 bbls.	Spills 10,000 bbls.
Point Conception	19%	9%
Ventura	43	20
Point Dume	5	3
Point Fermin	92	59
Dana Point	11	5
La Jolla	13	7
N. San Miguel Is.	41	22
S. San Miguel Is.	6	3
N. Santa Rosa Is.	41	23
S. Santa Rosa Is.	8	4
N. Santa Cruz Is.	75	49
S. Santa Cruz Is.	6	3
Anacapa Is.	56	34
Santa Barbara Is.	14	8
W. San Nicolas Is.	13	7
S.W. Santa Catalina Is.	8	4
Los Coronados Is.	15	8
Tanner Bank	35	19
Cortez Bank	43	25

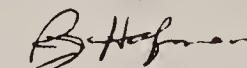
These probabilities seem to be somewhat higher than those used to assess the possible impacts on marine mammals and seabirds, and support the conclusion (sub-paragraph 4-82) that impacts from cumulative sources could be substantial.

Pages 4-83 - 4-87: This section of the DEIS presents and discusses information concerning the probable occurrence and likely effects of an oil spill on endangered and threatened species. Like the preceding section on non-endangered and non-threatened species, it does not consider the effects of other contaminants, and may underestimate the probable occurrence and effects of oil spills.

Page 4-85, paragraph 2: This paragraph notes that the sea otter's range in California is limited primarily to the area between Monterey Bay and Pismo Beach and that there is a low probability of oil from Sale No. 68 activities striking a portion of this range. It does not but should note that, at one time, sea otters did inhabit areas of the Southern California Bight and that, during the twenty-five year projected life of the proposed sale area, otters very well could re-colonize at least part of the area. The last sentence in the paragraph should then be rephrased to read something like: "If an oil spill does occur in or adjacent to an area inhabited by otters, the impacts could be severe."

We look forward to receiving the FEIS. If members of your staff have any questions concerning our comments, please let me know.

Sincerely,



R. J. Hofman, Ph.D.
Scientific Program Director

Enclosures

13.13

13.15

13.16

13.14

ATTACHMENT 1

LITERATURE CITED

- Dohl, T. P. et al. (9 authors). 1980. Summary of marine mammal and seabird surveys of the Southern California Bight area, 1975-1978. Vol. II. Synthesis of findings. Center for Coastal Marine Mammal Studies, University of California, Santa Cruz, CA 95064, 379p.
- Jehl, J. R., Jr. and C. F. Cooper (eds). 1980. Potential effects of space shuttle sonic booms on the biota and geology of the California Channel Islands: Research reports. Tech. Rep. 80-1. Center for Marine Studies, San Diego State University, San Diego, CA 92182, 246p.
- Stewart, B. 1980. Historical and present populations of pinnipeds in the Channel Islands p. 45-98 in Jehl and Cooper, 1980 (see above).

ATTACHMENT 2

ADDITIONAL PUBLICATIONS CONCERNING THE
EFFECTS OF NOISE AND OIL ON MARINE MAMMALS

- Barabash-Nikiforov, I. I., V. V. Reshetkin, and N. K. Shidlovskaya. 1947. The sea otter (Kalan). Trans. from Russian by A. Birron and Z. S. Cole, 1962. Nat. Sci. Found. and U.S. Dept. Int., Washington, D.C. (Israel Program for Sci. Trans.) 227p.
- Geraci, J. R. and D. J. St. Aubin. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review. Vol. 42, No. 11. National Marine Fisheries Service, U.S. Dept. Com., Seattle, WA pp. 1-12
- Geraci, J. R. and T. G. Smith. 1977. Consequences of oil fouling on marine mammals. In: Effects of petroleum on arctic and subarctic marine environments and organisms, Vol. II, Biological effects. D.C. Malins (ed), Academic Press, N.Y.
- Kooyman, G. L. and D. P. Costa. 1979. Effects of oiling on temperature regulation in sea otters. OCS Research Unit No. 71.
- Siniff, D. B., A. M. Johnson, and T. D. Williams. 1977. Observation on responses of sea otters to oil contamination. Proc. Second Conf. Biol. of Marine Mammals. San Diego, CA 12-15 December.

Responses to MARINE MAMMAL COMMISSION

location of wells, platforms and pipelines and to require changes in same to minimize the potential for accidents. Also see Section I.B.6 of the EIS concerning proposed stipulations.

Geophysical information on Proposed Sale No. 68 tracts is currently being evaluated by USGS and will be used to propose tract stipulations and deletions. This evaluation is nearing completion at this writing.

See also response 7.5

The oil spill analysis did take into account seasonal variation in winds and currents (see POCS Technical Paper No. 81-2).

The EIS has been revised as appropriate.

The EIS will not be modified at this time since the staff involved in designating the categories of impacts feels that the descriptive adjective "severe" more nearly parallels the other adjectives used.

Bonnell's (1980) Figure II-3 and Table II-1 are now included in the FEIS. The table provided in the comment has been modified and included in Section IV. of the EIS.

Statements have been added to appropriate subsections of Section IV.C.7 clarifying effects of the probable occurrence of oil spills and regarding contaminants other than oil.

Section IV.C.7 has been revised to more fully discuss potential impacts to sea otters.

13.1 There is not sufficient information at present on development and production activities to evaluate the proposals in detail and render a biological opinion. This has been clarified in the EIS. As noted in Section I.B.7., USGS evaluates development plans and, if significant impacts are expected, an EIS is prepared.

13.2 The EIS has been revised to reflect the suggestion.

13.3 Sections II.B.1 and IV.C.6 have been revised as appropriate.

13.4 Section III.B.4 has been revised as appropriate.

13.5 Section III.B.4 has been revised to indicate that, to date, the population of the California sea lion has been healthy and growing.

13.6 Section III.B.4 has been revised as suggested.

13.7 Section III.D.2 has been revised to indicate the possibility that the Guadalupe fur seals may form a resident population in the region.

13.8 That statement is supported by 3 years of surveys in which no population declines were observed. The systematics of Tursiops and Delphinas are complex. It is Dohl's opinion (personal communication, 1981) based upon observations that these different morphs intermingle and that distinct breeding populations are not likely.

13.9 Section III.D.2 has been revised as appropriate.

13.10 The probability of oil spill occurrence in the Oil Spill Risk Analysis Model (OSRAM) is indeed based on the assumption that "realistic estimates can be based upon past OCS experience." All oil spills regardless of cause are considered in the OSRAM. Past experience in the Gulf of Mexico and Pacific OCS indicates that geohazards (active faults, slumps, shallow gas) have not contributed spills of 1,000 bbl. or more to the environment.

USGS and BLM require geohazard surveys as part of Exploration and Development Plans as well as pipeline permit and right-of-way applications. These surveys are used by the agencies to evaluate the design and



The Port of Long Beach

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August 24, 1981

Manager
Pacific OCS Office
Bureau of Land Management
1340 W. 6th Street
Los Angeles, CA 90017

Subject: EIS for Lease Sale 68

Gentlemen:

The Port of Long Beach has reviewed the Environmental Impact Statement for OCS Lease Sale 68 and has serious reservations as to its adequacy and the selection of tracts offered in the sale.

In-depth analysis of hazards posed by placing structures in established shipping lanes and traffic separation zones is lacking. It is suggested on page 4-116 of the EIS that offshore platforms could provide a benefit to navigation if properly equipped. We find this to be misleading as ships currently have no difficulty navigating in southern California waters and can only be hindered by having to navigate around increasing numbers of offshore structures. Simply painting the structures brightly and equipping them with navigational aids does not insure that they will not be hit by a ship. This treatment requires constant vigilance by the ship's master to avoid an accident. This type of vigilance has in the past been shown to be lacking in review of accident reports. In light of this aspect of human nature, it seems foolhardy to allow incompatible activities such as oil development to occur in established shipping lanes or vessel precautionary areas.

Manager
Pacific OCS Office
August 24, 1981
Page Two

The Port of Long Beach recommends deletion of all proposed tracts in the established shipping lanes, separation zone and vessel precautionary area from OCS Lease Sale 68.

Sincerely,

James H. McJunkin
Executive Director

Leland R. Hill

Leland R. Hill
Director of Port Planning

LRH:mjb

cc: A. Zetterberg-POLB
D. Taub-USCG

14. The EIS has been revised to include more information on navigation hazards from Proposed Sale No. 68. Drilling in all leased tracts will be considered by USCG on a case-by-case basis. The U.S. Coast Guard's current policy and proposed regulations do not permit exploratory drilling and permanent structures within the established UTSS traffic lanes, precautionary areas and safety fairways. However, exploratory drilling within the separation zone may be permitted with certain restrictions. Permanent structures within the separation zone may be permitted on a case-by-case basis. Deletion of Tract 165 is considered in Section II.B as Alternative 5 since this tract would be entirely within the proposed reconfiguration of the precautionary area. Also see Section III.C.7.

San Diego
ASSOCIATION OF
GOVERNMENTS

Suite 524, Security Pacific Plaza
1200 Third Avenue
San Diego, California 92101
(714) 236-5300

July 7, 1981

Mr. William Grant
1340 West 6th Street
Room 200
Los Angeles, CA 90017

Subject: SANDAG Executive Committee Action DEIS for OCS Lease Sale No. 168

Dear Mr. Grant:

On July 6, 1981 the SANDAG Executive Committee reviewed the DEIS. Based on SANDAG investigation of the subject report, the Executive Committee has determined that further review by SANDAG is unnecessary. However, the Executive Committee does recommend that the comment be forwarded to the Interior Department.

The San Diego region is very concerned about the adverse impacts of offshore oil and gas production in the nearshore areas. The DEIS for Lease Sale No. 68 provides no new information as to: (1) the ability of the oil industry and other agencies to contain or clean up an oil spill, (2) the adverse impacts of hydrocarbon transmissions to the onshore communities, and (3) the industry's ability to safely produce the resource in deep water.

If you have any further questions, please do not hesitate to call Mr. Jack Koerper at 236-5372.

Sincerely,

Joan K. Martin

JOAN K. MARTIN
Director, Areawide Clearinghouse

JKM:JK:jl

NI-285

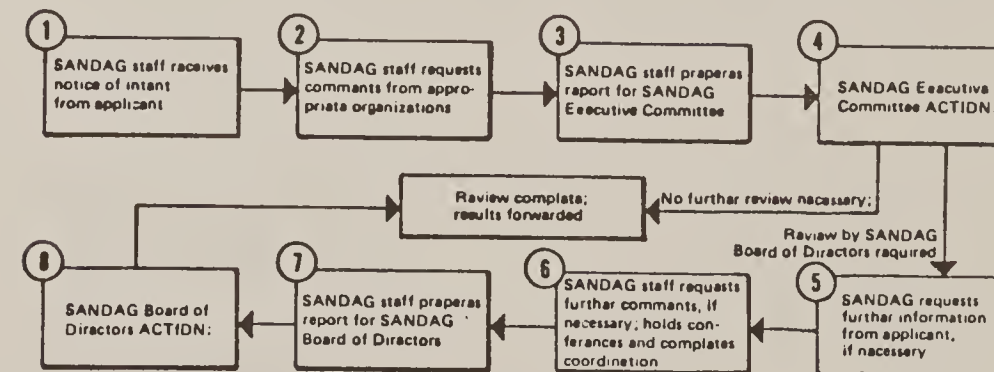
AREAWIDE CLEARINGHOUSE REVIEW
(A-95)

Objectives

The Areawide Clearinghouse Review process in San Diego is a regionwide intergovernmental cooperation mechanism designed to improve federal and state activities in a manner consistent with local government needs. It provides a quick and efficient service to federal, state and local governments by maximizing direct intergovernmental contacts before major federal and state planning, funding, development and regulatory decisions are completed. The process works best at the outset of federal and state

planning and decision-making affecting the San Diego Region. Often its most useful product is the strengthening of local applications for federal funds prior to the point when they are submitted to the federal government, thereby improving the chances for funding approval. The process also has the capability of revealing untimely, inconsistent, or duplicating federal and state activities and is designed in a positive, cooperative framework that supports the needs of local governments.

Process



Criteria

- The extent to which the project is consistent with or contributes to the fulfillment of comprehensive planning for the region, or any of its localities.
- The extent to which the proposed project:
 - Duplicates, runs counter to, or needs to be coordinated with other projects or activities being carried out in or affecting the area; or
 - Might be revised to increase its effectiveness or efficiency.
- The extent to which the project contributes to the achievement of State, areawide, and local objectives and priorities relating to natural and human resources and economic and community development including:
 - Appropriate land uses for housing, commercial, industrial, governmental, institutional, agricultural, and other purposes.
 - Wise development and conservation of natural resources, including land, air, water, mineral, wildlife, vegetative and others;
 - Balanced transportation systems, including highway, air, water, pedestrian, mass transit, and other modes for the movement of people and goods;
 - Adequate outdoor recreation and open space;
 - Protection of areas of unique natural beauty, historical and scientific interest;
 - Properly planned community facilities, including utilities for the supply of power, water, and communications, for the safe disposal of wastes, and for other purposes; and
 - Concern for high standards of design.
- The extent to which the project significantly affects the environment including the consideration of:
 - The environmental impact of the proposed project;
 - Any adverse environmental effects which cannot be avoided should the proposed project be implemented;
 - Mitigation measures proposed to minimize the impact;
 - Alternatives to the proposed project;
 - The relationship between local short term uses of man's environment and the maintenance and enhancement of long term productivity;
 - Any irreversible and irrevocable commitments of resources which would be involved in the proposed project or action, should it be implemented, and
 - The growth inducing impact of the project.
- The extent to which the project contributes to more balanced patterns of settlement and delivery of services to all sectors of the area population; including minority groups.
- Effects on energy resource supply and demand.
- The extent to which people or businesses will be displaced and the availability of relocation resources.
- In the case of a project located in the coastal zone, the relationship of the project to the approved State program for the management of the coastal zone and its consistency therewith.
- In the case of a project for which assistance is being sought by a special purpose unit of government, whether the unit of general local government having jurisdiction over the area in which the project is to be located has applied, or plans to apply for assistance for the same or a similar type project.

San Diego Association of Governments
PROJECT NOTIFICATION

DATE: July 6, 1981

ITEM No.: NI-FY81-224, 225
242-248, 250-254,
257, 259, 260-269,
270-273, 275-278,
280-282, 284-286

TO: Executive Committee
FROM: Executive Director
SUBJECT: Project Notifications Submitted to Areawide Clearinghouse
June 1981

ITEM #	PROJECT NOTIFICATIONS	STAFF RECOMMENDATION
(A) NI-285	<u>Draft Environmental Impact Statement for the Outer Continental Shelf Lease Sale No. 68/Department of the Interior</u> Reviewed pursuant to OMB Circular A-95, Part II and the National Environmental Policy Act Deadline: August 1981	NOT REVIEW/ COMMENT

The Department of the Interior has distributed the DEIS for OCS Lease Sale #68 for review and comment. The proposed Lease Sale includes 218 tracts which are located in the Santa Barbara Channel, off the Los Angeles-Long Beach shoreline, and the outer bank areas. The tracts range from Point Conception to south of San Clemente Island and lie in waters from 46 to 1,500 meters deep.

Staff is recommending no further review of the report because the area proposed for the Lease Sale does not include any nearshore tracts between Dana Point and the International border. However, the following comment should be forwarded to the Interior Department:

Comment: The San Diego region is very concerned about the adverse impacts of offshore oil and gas production in the nearshore areas. The DEIS for Lease Sale No. 68 provides no new information as to: (1) the ability of the oil industry and other agencies to contain or clean up an oil spill, (2) the adverse impacts of hydrocarbon transmissions to the onshore communities, and (3) the industry's ability to safely produce the resource in deep water.

Responses to SAN DIEGO ASSOCIATION OF GOVERNMENTS

- 15.1 The committee, formed as a result of the National Ocean Pollution Planning Act, made the following statement: "Present technology for oil spill clean-up on open waters is reaching its practical limits within the context of existing knowledge in the behavior of oil in sea water" (Ocean Science News, August 3, 1981). Other studies have been or are being done to analyze industry's containment and clean-up capability. See, for example, California Coastal Commission's Preliminary Draft Oil Spill Response Capability, Phase I: Clean Seas (April 1981). A list of oil containment equipment has been added to the EIS as Appendix H. Other information concerning oil spill containment and cleanup has been added as appropriate.
- 15.2 Further information concerning adverse impacts of hydrocarbon transmissions to onshore communities has been added to the EIS.
- 15.3 The oil and gas industry's ability has been demonstrated by the existing deep water wells.



South Coast
AIR QUALITY MANAGEMENT DISTRICT

HEADQUARTERS, 9150 E. FLAIR DR., EL MONTE, CA 91731
ANAHEIM OFFICE, 1610 E. BALL RD., ANAHEIM, CA 92805 (714) 991-7200
CARSON OFFICE, 950 OOVLEN PL., SPACE E, CARSON, CA 90746 (213) 532-4102
COLTON OFFICE, 22950 COOLEY DR., COLTON, CA 92324 (714) 924-2960

June 22, 1981

Mr. John Lane
Bureau of Land Management
Pacific OCS Office
1340 W. Sixth St., Room 200
Los Angeles, CA 90017

Dear Mr. Lane:

DEIS OCS LEASE SALE NO. 68
AQMD #C10605C

OCS Lease Sale No. 68 will result in NO_x emissions which will contribute to a total onshore NO_x concentration that already greatly exceeds the California Ambient Air Quality Standard of 470 ug/m³ for NO_x, (Table IV, C-2a-2). Mitigation measures must be provided which will reduce the NO_x emissions associated with the offshore activities to concentration levels that will not contribute to the exceedance of the California Ambient Air Quality Standard. The District feels that any additional emissions in this heavily polluted air basin cannot be considered negligible.

16.

Thank you for the opportunity to review the DEIS on OCS Lease Sale No. 68. If you have any questions, please call Jerry Tucker at (213) 572-6426.

Sincerely,

Brian Farris
Brian Farris
Senior Air Quality Specialist
Planning Division
Headquarters

JT:ko

Response to SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

16.

A worst case scenario considered in the air quality study of Proposed Lease Sale No. 68 (POCS Technical Paper No. 81-7) may cause an exceedance of the one-hour California Ambient Air Quality NO_x Standard. However, air quality regulations issued by the Department of Interior, the agency responsible for regulating air emissions associated with OCS activities, do not have short-term significance levels for NO_x impacts. Therefore, no pollution mitigation measures would be required under the DOI regulations. It should be noted, however, that emissions associated with Proposed Lease Sale No. 68 activities during the peak emission year (worst-case scenario) could result in onshore NO₂ increments in excess of the proposed DOI California one-hour NO₂ significance level of 10 ug/m³. It is recognized that any increase in onshore ambient concentration of a pollutant for which the basin is regarded as nonattainment would be of interest to the local air quality agencies in charge of attainment and maintenance of standards. POCS Technical Paper No. 81-7 (Section VII) has discussed a number of NO_x reduction measures, should further control of emissions be required by law.

7-132

DEPARTMENT OF WATER RESOURCES

P. O. Box 6598
LOS ANGELES
90055

(213) 620-4107



ABC 8 UNL

United States Department of Interior
Bureau of Land Management
Pacific OCS Office
1340 West Sixth Street, Room 200
Los Angeles, CA 90017

Attention: Mr. William E. Grant, Manager

In response to your letter (No. 1027, 1120) concerning the Department's participation in the preparation of an Environmental Impact Statement (EIS) for the proposed oil and gas Lease Sale #68 offshore Southern California, please be advised that our major concern is the protection of any offshore fresh water resources.

Accordingly, we suggest that any offshore fresh water resources encountered during drilling for oil and gas be protected from any threat of impairment.

We understand that the proposed offshore oil and gas Lease Sale #68 is beyond the three mile limit, and therefore outside the jurisdiction of the State Division of Oil and Gas. However, we believe that if the EIS for Sale #68 were to include reference to complying with the State Division of Oil and Gas offshore regulations for sealing off fresh water resources during drilling, operation, production, maintenance, and abandonment of any oil and gas well, then these fresh water resources would be adequately protected from any threat of impairment.

Thank you for providing us the opportunity to comment.

Sincerely,

Robert Y. D. Chun, Chief
Planning Branch
Southern District



Responses to STATE OF CALIFORNIA,
DEPARTMENT OF WATER RESOURCES

17.

Any offshore fresh water resources encountered during an oil and gas drilling operation on the OCS are protected by the following Code of Federal Regulation. 30 CFR 250.41(a)(2) states

"(2) The lessee shall case and cement all wells with a sufficient number of strings of casing in a manner necessary to prevent release of fluids from any stratum through the well bore (directly or indirectly) into the sea; prevent communication between separate hydrocarbon-bearing strata (except strata approved for commingling) and between hydrocarbon and water-bearing strata; protect freshwater strata from contamination; . . ."

17.1

7-133



EDMUND G. BROWN JR.
GOVERNOR

State of California

GOVERNOR'S OFFICE
OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814
916/445-0282

August 14, 1981

Bill Grant, Manager
Pacific OCS Office
Bureau of Land Management
1340 West 6th Street, Room 200
Los Angeles, CA 90017

REGARDING: DEIS for OCS Lease Sale 68
SCH #81060510

Dear Bill:

This letter and the attached constitute the comments of the State of California on the Draft Environmental Impact Statement (DEIS) for OCS Lease Sale 68. I am submitting these comments on behalf of Governor Edmund G. Brown Jr. This material also constitutes the comments of the State Clearinghouse pursuant to OMB Circular A-95. California's review of the DEIS has uncovered serious inadequacies which must be corrected prior to preparation of the Final Environmental Impact Statement and any decision on the sale.

As Governor Brown and his representatives have repeatedly stated, California supports development of OCS oil and gas resources where it is consistent with the California Coastal Plan and where the benefits and risks of the development strike a reasonable balance among the objectives and goals of the OCS Lands Act. At the present time, we believe we can support leasing and eventual development of much of the Sale 68 area. There are, however, specific areas where environmental, economic and social values preclude leasing due to the risks of oil and gas development. As stated in my July 28, 1981 testimony, leasing is not acceptable within the Santa Barbara Ecological Preserve or Buffer Zone, the Santa Barbara Channel Islands National Marine Sanctuary, Santa Monica Bay, the approach routes to the Ports of Los Angeles or Long Beach, and offshore San Diego. We are also concerned that leasing the 12 tracts to the west of the mouth of Santa Monica Bay and the tracts off Orange County may jeopardize the recreational and economic values of these coastal areas. I urge you to specifically analyze the impact of leasing these tracts in the FEIS. Current patterns, geologic hazards, and the crossing of these tracts by vessel traffic lanes may result in our requesting they be deleted from the sale.

California is also concerned that the DEIS states that barges will be used to transport oil produced in the outer banks to refinery centers. We believe barges are a very risky means of moving crude oil. I urge you to thoroughly analyze the impacts of barge transportation in the FEIS or in a more comprehensive DEIS. Such an analysis must include consideration of transportation routes, prevailing weather

Bill Grant, Manager
Pacific OCS Office
August 14, 1981
Page Two

and current conditions, scheduling of barge trips, type and size of barges, technology of loading barges under the prevailing conditions, air emissions, and ability to contain and clean up oil spills under the conditions of the outer banks.

This office has also had preliminary discussions with representatives of the U.S. Navy about Lease Sale 68. They expressed concerns over hazards to personnel and facilities that may be located within the target or flight path of missiles that are attracted to large metal objects. Once California has had an opportunity to study the Navy's comments, we may support their likely request for tract deletions. We urge you to thoroughly consider potential conflicts with Naval operations in the FEIS.

Specific discussions of the deficiencies of the DEIS are attached as "California Comments on the Draft EIS for OCS Sale 68 DEIS." These comments are supported by the comments of state agencies in Appendix A, and in Appendix B, "Governor Brown's Comments on the Department of Commerce Suspension of the Oil and Gas Prohibitions in the Marine Sanctuary." The California comments cover air and water quality, oil spills, geohazards, refining capacity, marine resources, navigation safety, recreation and tourism, and economic impacts, as well as the need for a more thorough analysis of cumulative impacts from this and past sales. Also included are recommendations concerning adequate access to information and enforcement of rules and regulations that ensure the safety of OCS operations.

My staff and I are available to assist you with your presale planning process. If we can be of help or if you have questions, contact Gary Midkiff at 916/322-4245.

Sincerely,

Deni Greene

Deni Greene
Director

Enclosures

18.1

18.2

18.3

7-134

California's review of the Draft EIS for Sale 68 identified a number of deficiencies which must be corrected in the FEIS. As stated in testimony presented at the Santa Barbara hearing on July 28, California supports OCS leasing where the benefits exceeds the risks.

The DEIS fails to adequately analyze impacts and to present the latest information needed to balance the risks and benefits of an OCS lease sale. The following comments identify deficiencies in the DEIS which must be resolved prior to any decision on this sale. Included are contradictions within the DEIS and a compilation of our concerns as to: 1) the nature of analyses undertaken; 2) the adequacy of the data upon which analyses are based; 3) the appropriateness of assumptions used; and 4) the accuracy of conclusions drawn.

Air Quality

The emissions resulting from OCS activities likely to follow leasing of tracts in Sale 68 will impact three California air basins: South Central Coast, South Coast, and San Diego. As noted in past comments submitted by Governor Brown and the California Air Resources Board, and in the lawsuit filed on their behalf, there are numerous inadequacies and deficiencies in DOI's air quality regulations regarding OCS leasing and development. Many of the comments related to OCS Sale 53 and the DOI's Air Quality Regulations are still valid. We request that you incorporate by reference into the Sale 68 record the July 3, 1980 California comments on the Draft EIS for Proposed OCS Oil and Gas Lease Sale No. 53, and the June 19, 1980 Governor's Office, "Comments on Proposed Air Quality Rules for Oil and Gas Operations on the Outer Continental Shelf."

Specifically, review of the DEIS and, "Air Quality Analysis of the Potential Impact of OCS Lease Sale 68 Offshore Southern California," indicate that the modeling analysis is based on the erroneous assumption that the model used over land can be used over water. Further, the analysis uses inappropriate emission factors and has several inconsistencies, omissions and contradictions which must be corrected. Detailed comments as to the necessary corrections in the Air Quality Analysis and DEIS are contained in Appendix A, pages 1 to 57.

18.5c

Water Quality

The DEIS contains contradictions regarding potential water quality impacts as a result of OCS operations. At several places in the DEIS the deleterious effects of drilling muds, cuttings and fluids are dismissed by BLM while at other pages the DEIS states that knowledge necessary to reach such a conclusion is not available.

18.4

While we recognize that there is a debate as to the impacts of discharge of drilling fluids, muds and cuttings on the marine environment, contradictions such as are found in the DEIS are unacceptable. To resolve the debate, BLM, the EPA, and industry must proceed to examine the potential impacts, determine sublethal effects, such as reduced fertility and bioaccumulation of trace metals in marine populations, and evaluate the associated risks and benefits. Such evaluation must include study of elevated levels of barium, chromium, copper, lead and mercury which have been identified in sediments around drilling platforms, and consider the effects of dumping large volumes (in excess of 1,300,000 barrels) in the coastal waters of California during the life of OCS leasing. At the very least the DEIS must accurately describe the debate.

18.6

18.5a

18.5b

In addition, the effects of chronic day-to-day discharges of oil to the marine environment are too readily dismissed in the Draft EIS, despite reference to the lack of data on and the discussion of the circulation study (beginning this year) as an effort to

fill critical information gaps. It is not apparent from the discussion or conclusions in the DEIS that consideration was given to the National Academy of Sciences study, Safety and Offshore Oil, or to the September 1980 NOAA study, Climatology and Oceanographic Analysis of California Pacific OCS Region, in modeling of oil spill probability and impacts and oil spill trajectories. We believe these studies present data which indicate a high probability of spilled oil flowing into Santa Monica Bay during all seasons of the year. An evaluation of the data in these reports and oil spill trajectory analysis must be completed if the FEIS will accurately portray the potential impacts on the economically important recreation and fishing resource of the Bay. Depending on the results of this analysis, it may be necessary to delete tracts in and near the mouth of Santa Monica Bay.

Oil Spills

A primary concern associated with leasing of the OCS is that technology to prevent, control and clean up oil spills is not adequate to protect marine and coastal natural, social, and economic resources. Recent studies of OCS safety, and offshore wind and wave conditions in the areas of proposed sales, must be fully considered in the FEIS evaluation of oil spill potential and the discussion of the location and nature of spills impacts. Spills adjacent to or affecting the Santa Barbara Ecological Preserve and Buffer Zone, Santa Monica Bay, the Santa Barbara Channel Islands National Marine Sanctuary, Channel Islands National Park, and offshore San Diego are of particular concern. The FEIS must fully consider the potential effect of active faulting, unstable sediments prone to slumping, submarine landslides, liquefaction, and ground acceleration in increasing the probability of catastrophic oil spills through failures of a platform or pipeline. Conflicts with navigation which could result in marine collisions should also be considered and tracts within vessel traffic separation systems and port access areas should not be leased.

18.7 The DEIS claims the potential impacts are minimal by ignoring the value of resources which could receive severe impacts. While it is difficult to quantify the dollar value of natural resources, an effort has been made to do so in the case of the Santa Barbara Channel Islands National Marine Sanctuary. This analysis, recently completed by the California Resources Agency, estimates the value of resources identified as associated with the Sanctuary at \$9B2 million. The value of tourism in the affected counties was valued in 1979 at \$9.3 billion. These numbers are an indication of the high value of the natural environment to the economy of Southern California. Any listing of these resources must include the commercial and sport fishery, sea birds, and extensive feeding areas, tidal and subtidal habitat of significant population concentrations of marine mammals and sea birds. These resources depend completely upon the protection of waters around the Channel Islands which have been designated as Areas of Special Biological Significance and are included within the Santa Barbara Channel Islands National Marine Sanctuary and the Santa Barbara Ecological Preserve and Buffer Zone. More specific discussion of the value of these resources is contained in Governor Brown's response to the suspension of the oil and gas prohibition for the Marine Sanctuaries dated July 31, 1981, which I would like to incorporate by reference, and have attached as Appendix B.

18.8

18.9 The impact of oil spills on recreation resources is described in the DEIS as minimal despite acknowledgement of inadequate circulation data and failure to incorporate recent study data as described in the above discussion on water quality impacts. The FEIS must fully examine these impacts using the most accurate data and must weigh carefully the potential damage to the 42 state parks, beaches and natural preserves in the sale area.

18.10

18.11

18.12

18.13

18.14

Geohazards

The DEIS is seriously deficient in its evaluation of the potential impacts from leasing tracts in areas which are seismically active and geologically unstable. Although the DEIS refers to a study which is being prepared (W.C. Richmond, et al., Geologic Hazards and Constraints in the Area of OCS Oil & Gas Lease Sale 48, Southern California), it is unclear whether the data from the report was considered in preparation of the DEIS geohazards analysis. The analysis presented has many deficiencies which must be corrected in the FEIS. These include:

- unjustified addition of high hazards tracts to Sale 68 when they had previously been deleted from Sale 48 due to slope instability;
- unjustified inclusion of tracts with potentially hazardous geologic features based on inadequate interpretation of geohazards data in the DEIS;
- failure to incorporate geohazards and seismic potential in oil spill modeling work;
- failure to perform a detailed fault hazards study for the sale area including potential for ground acceleration and displacement;
- the failure to define specific lease stipulations which will be required before permitting any drilling activity (such stipulations must deal with requirements, etc. and must be included in the FEIS);
- the failure to incorporate seismic analysis in the evaluation of sediment instability so that platform design requirements can be established prior to the sale. (The discussion should include effect of earthquakes such as submarine landslides, slumps and liquefaction, as well as the magnitudes and frequency of recurrence of earthquakes. Such analysis is needed to improve the ability of state and federal jurisdictions to manage and protect the public resource through joint review and enforcement of OCS activity);
- the inadequacy of USGS enforcement of OCS lease provisions and operating regulations as identified in recent GAO reports on OCS post leasing activities.

The FEIS should specifically deal with each of the above deficiencies to resolve critical shortcomings in NEPA compliance.

We also recommend that DOI work with California state agencies to quickly resolve the conflicts over Section 26 information sharing agreements. Once these arguments are in place, California state agencies can cooperate in preparation of the necessary analyses described above. Further, we recommend that joint agreements such as provided in Sec. 19(c) of the OCSLAA be negotiated as soon as possible. Failing such agreements DOI's FEIS for Sale 68 must evaluate fully the potential risk of proceeding with the sale without adequate personnel to ensure compliance with lease terms and rules and regulations governing OCS exploration and development.

Marine Resources

While the DEIS recognizes the nature and value of the marine resources in the sale area, it unjustifiably dismisses the potential impact of OCS operations and oil spills on the affected populations and their habitat. The DEIS presents a clear case for acceptance of alternative No. 2 which includes deletion of the tracts and portions of tracts in the Santa Barbara Channel Islands National Marine Sanctuary. The DEIS does not, however, adequately discuss impacts on marine mammals and seabirds or the need for the Channel circulation study beginning this year to further define potential impacts. In the western end of the Channel the six mile buffer zone around the Islands may not be sufficient. Any final decision on tracts to be deleted must be based on findings of the circulation study and further comprehensive modeling of oil spill behavior. The circulation study should give special attention to tracts previously classified by BLM as, "Category A: Extreme Impact Potential," with regard to marine mammals and seabirds of the Southern California Bight. These tracts are specifically identified in Appendix A. The FEIS should carefully examine the potential impact on these tracts which overlie the upwelling which serves as a feeding area for marine mammals and seabirds.

DEIS notes the sensitivity of the sea otter to oil and the studies underway to examine possible sites at which a population might be established and be safe from threat of oil spills. We recommend that no action be taken which would preclude future decisions to translocate a sea otter population to San Nicholas Island. In addition, we recommend that the FEIS include an examination of the potential effects of the proposed sale on San Nicholas as a possible translocation site.

Refining Capacity

The DEIS assumes that Sale 68 oil will be refined in the Los Angeles area and will back out equal amounts of Alaskan or foreign oil. The DEIS states that Sale 68 oil is likely to be heavy and refining this oil in the Los Angeles area will require expensive modification of refineries. The DEIS fails to examine the impacts on air quality, water quality, transportation, noise, etc. as a result of such refinery modifications. The FEIS must remedy this and also examine the possibility that the oil will be transported elsewhere and perhaps require refinery modification there as well.

Cumulative Impacts

While the DEIS includes a surficial discussion of the cumulative impacts of OCS leasing in Southern California, it in no way quantifies the cumulative effect of OCS leasing which will result from this, the fifth sale in the region. The FEIS must dramatically expand coverage of cumulative impacts on air and water quality, marine biological resources, endangered and threatened species, sport and commercial fishing, land use, transportation, and visual resources. Further, the FEIS must evaluate the cumulative potential that leasing in areas known to have geohazards will result in a catastrophic failure of a pipeline or platform and the impact of such an event on the resources of the Southern California Bight.

APPENDIX A

California Comments
on the
Draft Environmental Impact Statement
on Proposed OCS
Lease Sale No. 68

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18.19

AIR RESOURCES BOARD

1102 Q STREET
P.O. BOX 2815
SACRAMENTO, CA 95812



July 24, 1981

Mr. John Lane
Pacific Outer Continental Shelf Office
Bureau of Land Management
U.S. Department of Interior
1340 W. Sixth Street, Room 200
Los Angeles, CA 90017

Dear Mr. Lane:

Subject: Comments on (1) Air Quality Analysis of the Potential Impact of OCS Lease Sale No. 68 Offshore Southern California, and (2) Draft Environmental Impact Statement, SCH#81060510

Introduction

The Department of Interior (DOI) proposes to offer for lease (Lease Sale No. 68) 218 tracts off the Southern California coast from Point Conception to San Diego for oil and gas exploration and development. The tracts are typically 3 miles by 3 miles square, and range from 2 to 84 miles from shore in water depths from about 150 to 4,900 feet.

It is estimated that 121 million barrels of oil and 280 billion cubic feet of gas are recoverable from Lease Sale No. 68 during the life of the field. Eight to ten production platforms are expected to be constructed. Platforms near shore will use pipelines to transport the gas and oil to onshore processing facilities, whereas platforms located far offshore will reinject the gas and use tankers or barges to transport the oil. Emissions resulting from the development of this lease sale are expected to impact three California Air Basins: South Central Coast, South Coast, and San Diego.

In the past the Air Resources Board (ARB) has submitted comments on previous OCS Lease Sales, concerning the inadequacies and deficiencies of the DOI air quality regulations concerning OCS leasing and development. Many general comments related to OCS 53 are still valid and should be considered in the leasing of OCS 68. We would like to incorporate into the record of the Lease Sale No. 68 proceedings, as reference, the June 20, 1980 ARB "Comments on the Draft EIS for the Proposed OCS Oil and Gas Lease Sale No. 53," and the June 19, 1980 Governor's Office "Comments on Proposed Air Quality Rules for Oil and Gas Operations on the Outer Continental Shelf."

18.20(1a)

Mr. John Lane

-2-

July 24, 1981

On April 15, 1981, the ARB staff submitted comments on the "Draft Air Quality Analysis of the Potential Impacts of OCS Lease Sale No. 68 Offshore Southern California." At that time we explained that due to the short review time, we did not address the modeling analysis and assumptions found in the draft but that we might do so in the future. The ARB staff has since received the final "Air Quality Analysis of the Potential Impact of OCS Lease Sale No. 68 Offshore Southern California" and a "Draft Environmental Impact Statement." This letter, therefore, incorporates comments on (1) the modeling analysis and assumptions found in the "Draft Air Quality Analysis" (DAQA), (2) the final "Air Quality Analysis" (AQA), and (3) the "Draft Environmental Impact Statement" (DEIS).

Comments

A. Modeling Analysis

A review of the modeling analysis and assumptions, as presented in the DAQA, has been completed by the ARB's Research Division. Our comments are presented in the form of a memorandum from John R. Holmes to me (Attachment I). In summary, the DAQA and AQA are inadequate because the modeling analysis is based on the erroneous assumption that the same model used on land can also be used over water.

18.20(1b)

B. Final Air Quality Analysis

The final AQA contains very few changes in content from that of the DAQA. These changes are very minor and do not address all of our previously submitted comments (April 15, 1981). For these reasons, we are submitting a copy of our earlier comments (Attachment II) and request that further consideration be given to those earlier comments which are not addressed in the Final AQA.

18.20(2)

To clarify the comments concerning the treatment of emissions from temporary facilities, it is the policy of the ARB that all emissions associated with OCS exploration and development be included in emissions inventories and that the local district's rules and regulations concerning mitigation shall apply.

18.20(3)

We have listed below some additional comments regarding emission factors (presented in Table A-1) used to estimate potential impacts which may result from Lease Sale No. 68:

1. The oxides of nitrogen (NOx) emission factor for Derrick Barges used during platform installation should be 494 lbs/10³ gallons fuel, not 49.4.
2. The total hydrocarbons (THC) and volatile organic compound (VOC) emission factors for power generation by gas fired turbines during the production phase should be 0.2 x 10⁻³ lbs/hp-hr and 0.18 x 10⁻³ lbs/hp-hr (assuming 90% reactivity) respectively, not 1.1 and 0.99.

18.20(5)

7-139

July 24, 1981

3. On page V-31 it is stated that the estimated sulfur dioxide (SO_2) emissions associated with natural gas combustion are based on two assumptions: (1) the sulfur recovery unit operates at 94% removal efficiency, and (2) an assumed sulfur content in the raw gas of .9% by volume. Based on these two assumptions the natural gas that will be burned in turbine generators will have a sulfur content of 540 ppm_v. 18.20(6)

The sulfur oxide (SO_x) emission factor (presented in Table A-1) for power generation by gas fired turbines during the production phase is based on an assumed sulfur content of pipeline gas of 2000 gr/10⁶ scf (3 ppm_v). Since pipeline quality natural gas is not used, a material balance should be performed to determine SO_x emissions based on the actual sulfur content.

4. The NO_x emission factor for natural gas combustion (for commercial heating) during the production phase should be 120 lbs/10⁶ ft³, not 100. 18.20(7)
5. All emission factors presented under Support for All Activities should be shifted to the left by one column (THC factors appear under the VOC column heading, VOC factors appear under the NO_x column heading, NO_x factors appear under the SO_x column heading, etc.). 18.20(8)
6. The correct average efficiency used to calculate emission factors for gas fired turbines is 10⁴ Btu/hp-hr, not 10⁵ Btu/hp-hr as indicated in Footnote 3. However, the emission factors which appear in the table are correct. 18.20(9)

C. Draft Environmental Impact Statement


1. On page 3-20 reference is made to Table 1 in Appendix A. There is no such table. The correct reference should be given. 18.20(10)
2. Table III.A.5-1 contains several errors in presenting current air quality designations of the South Central Coast Air Basin. A copy of "Air Quality Designations for California as of July 1, 1981" is attached (Attachment III) so that Table III.A.5-1 can be amended accordingly. 18.20(11)
3. On page 4-40 of the draft it is stated within the text that Table IV.A.5.b.ii-1 shows annual emissions for six pollutants, and that from the table it can be seen that hydrogen sulfide (H_2S) is emitted in the smallest quantity. However, inspection of the table, on page 4-41, reveals that only five pollutants are listed and H_2S is not one of them. The final EIS should include H_2S emissions in the table. 18.20(12)

July 24, 1981

4. On page 4-40, it is stated that the predicted impact of Sale No. 68 emissions on ozone and other air pollution concentrations is discussed in Section IV.B. Inspection of Section IV.B reveals no discussion of impacts on ozone or any other pollutant. 18.20(13)
5. On page 4-40, reference is made to "POCS Technical Paper No. 68-4," and on page 4-50 reference is made to "POCS Technical Paper No. 81-4." The DEIS indicates that these technical papers have been incorporated in the AQA. However, no references to either of these technical papers have been made in the DAQA or Final AQA. 18.20(14)
6. Table IV.C.2.a-1 presents a "Summary of Highest Computed Annual Average Onshore Concentrations." Values presented for NO_2 concentrations from offshore activities do not match those given in Table 6 of the Executive Summary of the AQA. Assuming the AQA values are correct, the values for the Santa Barbara Channel and the Inner Banks zones should be 0.3 $\mu\text{g}/\text{m}^3$ and 0.56 $\mu\text{g}/\text{m}^3$, respectively, not 0.1 and 0.4. 18.20(15)
7. Footnote #3 on Table IV.C.2.a-3 of the DEIS states that "Increments of less than 0.1 pphm (ozone) are considered negligible." This same table appears in the Executive Summary of the AQA as Table 7. However, comparison of the values presented in both tables reveals several instances where values ranging from 0.1 to 0.3 pphm in the AQA are listed as "Negligible" in the DEIS. The DEIS should have explained the reason for this discrepancy. In any event, any increase in ozone concentration in the onshore area will exacerbate the violation of the national ambient air quality standard for ozone and the state ambient air quality standard for oxidant. 18.20(16)

If you have any questions, or if we can be of further assistance, please contact Mr. Ronald Friesen or Mr. Greg Allen of my staff at (916) 322-6026 or (916) 322-6038.

Sincerely,


Peter D. Venturini, Chief
Regional Programs Division

cc: Jeb Stuart
John English
Jan Bush
Richard Sommerville
Gary Midkiff

Memorandum

To : Peter D. Venturini, Chief
Regional Programs Division

Date : July 1, 1981

Subject: Review of Draft Air
Quality Analysis of the
Potential Impact of OCS
Lease Sale No. 68
Offshore Southern
California

From : Air Resources Board

John R. Holmes, Ph.D.
Chief, Research Division



As you have requested, the Air Quality Modeling Section has reviewed the modeling analysis for the above-mentioned report dated February 1981 prepared by Environmental Resources Group. The modeling approach used in the draft EIS to estimate worst case downwind ground level concentrations for SO₂, TSP and NO₂ was by applying a Gaussian modeling formulation. A trajectory model was used to estimate the onshore ozone impacts from OCS-related emissions.

Based on the information contained in the EIS, our comments have been separated into two parts. The first deals with the technical evaluation of the modeling formulation, and the second part deals with the implementation of the models to evaluate the future air quality impacts of the OCS emissions.

ATTACHMENT I

I. Model Formulation

Our review of the model formulation for the impacted area emphasized the validity of the identified physical and chemical processes which affect the dispersion and transformation of pollutants emitted in the OCS. This required an assessment of the adequacy of the algorithms used in the models to simulate the onshore air quality impacts.

A. Gaussian Modeling

1) We believe it is valid to use Gaussian models only as a screening analysis to determine if there is a likelihood that an unacceptably large impact may result from pollutants released by a single or multiple source. This, of course, assumes that the project in question is located on land with relatively flat terrain for which the Gaussian model is appropriate. For the short-term analysis, the horizontal and vertical turbulent parameters used in the PTMAX and PTDIS models are based on turbulent parameters for overland conditions and not for over water transport. The short-term Gaussian calculations need to be performed again using an appropriate algorithm to characterize over water turbulent parameters. Using the Gaussian models with over water transport turbulence parameters will predict higher ground level concentrations than those presented in the EIS.

18.20.1(1)

July 1, 1981

2) There are two other meteorological processes that may lead to high short-term ground level concentrations. The first process is a fumigation. For the fumigation scenario, the analysis can be made using a Gaussian model. For this condition the plume can be assumed to travel over the ocean directly from the source towards the coastline under stable conditions. At the coastline, erosion of the inversion begins due to the thermal heating of the ground surface, thus causing fumigation. In the EIS, there was no attempt, either qualitatively or quantitatively, to estimate the air quality impacts associated with these conditions.

18.20.I(2)

The second process is where dead calm to light and variable winds persist offshore for several hours along with a stably stratified atmosphere which limits dispersion. Under these conditions, emissions corresponding to several hours' operation would build up in the vicinity of the facility. If this cloud of pollutants were then advected towards the coastline subsequent to the period of stagnation and buildup of emissions, much higher onshore air quality impacts than are estimated in the EIS would result. This worst case condition cannot be evaluated using a Gaussian model, but needs to be assessed to determine the maximum potential onshore air quality impacts.

18.20.I(3)

3) For the estimates of the maximum annual ground level concentrations using the CDM model, the analysis did not consider over water turbulence parameters. Using over water turbulence parameters will tend to increase the estimated annual concentrations as presented in the EIS.

18.20.I(4)

B. Modeling of Ozone Impacts

1) The RAPT model was used in evaluating the onshore impacts of ozone resulting from the OCS precursor emissions. In this model, the conservation of mass concept is applied to a variably zoned, cross-wind Lagrangian plane of cells as it undergoes vertical and horizontal diffusion and chemical transformations as the column of cells is advected through the modeling domain. The model was used to investigate the effects of offshore emissions during onshore ozone episodes. Several trajectories with different starting times were hypothesized and the simulations were carried out over a two-day period.

18.20.I(5)

We believe that this analysis is seriously flawed. The accuracy of vertically resolved trajectory models, including RAPT, depends upon the validity of one critical assumption: that the moving air column retains its integrity throughout the simulation. Verifying this critical assumption requires a knowledge of upper level wind data. Based on our general knowledge of meteorology, we believe it unlikely that all vertical layers used in RAPT are advected by the hypothetical uniform wind fields presented in the EIS. It is especially unrealistic to assume that the air column or "wall" retains its

18.20.I(6)

July 1, 1981

integrity over the entire simulation run. This fundamental assumption regarding the vertical integrity of the air column, in the absence of a knowledge and investigation of upper winds for the days in question, is not acceptable. This lack of rigor where long transport times and distances are involved and the emissions from these sources will unquestionably mix with significant onshore emissions from other sources seriously flaws the analysis.

Furthermore, multi-day air quality simulations may be required to assess the full impact of offshore emissions. This is necessary in order to minimize the influence of assumed initial conditions on conclusions drawn from model predictions. However, trajectory models, by the very nature of their formulation, are not suitable for multi-day runs. This is because it is extremely rare for an air parcel or air column to maintain its integrity over a two-day period.

18.20.I(7)

We believe that this shortcoming also precludes the use of trajectory models in evaluating the air quality impacts of multi-day simulation unless it can be demonstrated that the air column retains its integrity throughout the simulation period.

18.20.I(8)

2) Another limitation of RAPT is the neglect of vertical wind shear. In the atmosphere it often happens that elevated point sources released at one point in time and space are later mixed downward to react with emissions from surface sources at a different time and place. Because of different transport velocities between the upper and lower elevations, they are brought together at some unique position. The uniform wind velocity assumption, as assumed in RAPT, restricts the model to a more limited set of emission interactions.

18.20.I(9)

3) The EIS indicates RAPT's inappropriateness for complex terrain. This caveat should be taken very seriously. From the documentation presented in the EIS, it seems that the model is to be used at a very fine horizontal resolution (<1 km). At this scale, the variations and magnitudes of horizontal mass divergence can be very significant in complex terrain such as exists onshore of the impacted area. Indeed, motions at the scale size of the grid spacing are approaching the same order of magnitude as the parameterized turbulence. This can result in the violation of the averaging principle of Reynold's stresses and the violation of K-theory upon which the governing equation of RAPT is based.

18.20.I(10)

4) The text of the EIS states that the deposition velocities for all pollutants were assumed to be zero when evaluating the impacts of the OCS emissions. However, in Appendix B-11-1, where a technical discussion on the RAPT modeling formulation is presented, it states that the deposition velocity for ozone and nitrogen dioxide are

18.20.I(11)

0.6 cm/sec and carbon monoxide is 0.1 cm/sec. There is obviously a contradiction as to what values of the deposition velocity were actually used in the impact assessment. In any event, the 0.6 and 0.1 cm/sec values of the deposition velocities as presented in the EIS are not justified. Deposition velocities are a function of meteorology and surface conditions which apparently are not incorporated into the model. Rather, it appears that deposition velocities were treated as free parameters in the RAPT model. This is scientifically unacceptable.

5) The Caltech chemical mechanism was used in the RAPT model. The mechanism used in the model was referenced to a version dated November 5, 1979. However, since that date several chemical reactions and rate constants have been changed by Caltech. It is not clear at this point whether the new version of the mechanisms would have significantly changed the results of the study; however, this should be evaluated by the consultant.

6) In Appendix B-II, mention is made that a listing of the RAPT computer code is presented in Section 4. However, there is no listing of the code in the EIS. The consultant must provide to the ARB a listing of the code so that a more detailed evaluation of the model can be made.

18.20.I(12)

18.20.I(13)

II. Model Application

In our review of the modeling application, we tried to determine whether 1) the models had been applied consistently with the limitations and assumptions appropriate to each model, 2) the input data used were reasonable and representative of the project area, based upon available data, 3) proper interpretation of modeling results had been carried out so that impacts were properly evaluated, and 4) adequate information and documentation were provided to allow one to evaluate model input data and output calculations.

A. Gaussian Modeling Analysis

In general, the Gaussian modeling approach appears to be adequate. The analysis presented in the EIS focused on the worst-case combinations of meteorology and emissions. However, the following summarizes our comments regarding the Gaussian modeling analysis.

18.20.I(14)

1) As previously mentioned in the comments on the Gaussian modeling formulation, the analysis should incorporate overwater rather than land turbulent parameters.

18.20.I(15)

2) For the long-term average modeling analysis for the South Central Coast Air Basin, it was assumed that the offshore mixing depths varied diurnally from 300 to 400 meters. No reference is made as to how the values were obtained.

18.20.I(16)

3) For the short term modeling analysis, the mixing depths were assumed to be one-half the average annual depth in the vicinity of the platforms. No reference or documentation is presented as to how the annual average mixing depth was calculated. In addition, for a worst-case steady state condition with complete plume trapping, a more representative worst case should be formulated by assuming the height of the inversion equal to the effective stack height of the emission source with the highest plume rise. This condition needs to be simulated before an evaluation can be made of whether the short-term standards are violated.

18.20.I(17)

B. RAPT Modeling Analysis

1) The trajectories shown in Figures IV-1 through IV-13 in the EIS all appear reasonable. However, the discussion of the individual trajectories uses terms like "highly improbable", "atypical", "low probability", "frequent", or "very infrequent". In order to describe the trajectories in these terms, knowledge of the climatological frequency distribution of offshore wind patterns must be known. The source of these climatological data needs to be identified and the frequency of occurrence should be quantified where possible.

18.20.I(18)

According to the EIS (p. IV-2, para. 2), worst-case short-term concentrations occur with low inversion height and low wind speeds. Later on in the paragraph, the EIS states that maximum impacts occur with 9 meter/second winds and 800 meter inversion height. These conditions represent relatively high inversion heights and high wind speeds. These statements are obviously inconsistent. More information needs to be presented in the EIS on the climatology of the area to fully evaluate the validity of these conditions.

18.20.I(19)

In addition to the trajectories described above, trajectories must be constructed to evaluate the onshore air quality impacts for other possible worst case conditions. These include a fumigation condition and the case where the OCS emissions are allowed to accumulate for several hours within a stably stratified atmosphere (with dead calm to light and variable winds) and then are advected onshore.

18.20.I(20)

2) The EIS does not present sufficient data on the input data files used in the RAPT modeling analysis. In addition, the EIS lacks the documentation needed to evaluate the RAPT model analysis. Specifically, the following needs to be provided before a full evaluation of the modeling results can be made:

18.20.I(21)

a) Listing of the computer code;

b) Spatial resolution used in specifying the variable grid size;

July 1, 1981

c) Documentation of RAPT's fundamental treatment of multiple point sources along a given trajectory;

d) Values of the hourly concentrations specified for boundary conditions and the concentrations specified for initial conditions--for each trajectory in the modeling analysis;

e) Output of gridded emissions along the trajectories used in the analysis; and

f) Documentation of the formula used to calculate plume rise enhancement from buoyancy and momentum.

3) For the base case simulations, the initial conditions used in RAPT were adjusted to produce onshore ozone concentrations within the range of higher recorded ozone episodes for the area where each trajectory ends. Depending on how the initial conditions were "adjusted", this approach could result in the initial conditions dominating the calculation of onshore ozone concentrations while minimizing the OCS emission impacts on shore. This ad hoc treatment tends to disguise the effects of the offshore emissions on the high onshore ozone concentrations.

18.20.I(22)

4) In the modeling analysis presented in the EIS, the future initial conditions for each trajectory were assumed to remain at the same level as the "adjusted" base case conditions except for those trajectories originating in the South Coast Air Basin. For these trajectories, the initial conditions were assumed to change in the future based on the emissions reduction within the SCAB.

Specifying the future initial conditions for the offshore trajectories at the same concentration levels as for the "adjusted" base case appears to have no justification. Since high initial conditions have a major influence on the model's onshore prediction of ozone, the conclusions reached in the EIS from this assumption must be viewed as suspect. If high initial concentrations of hydrocarbon and NOx were assumed, it is not surprising that the difference in the predicted changes in ozone concentrations with or without the OCS emissions are minimal.

18.20.I(23)

5) Table 2.4-2 as presented in the EIS presents the hydrocarbon-splitting fractions for emissions and ambient air quality. These data, according to the EIS, were derived from measurements made in Los Angeles. However, no reference is made as to where these data were obtained. In addition, the hydrocarbon-splitting fractions for the ambient air quality data (presented in Table 2.4-2) were used to speciate the initial hydrocarbon concentrations for the start

18.20.I(24)

July 1, 1981

of the offshore trajectories. It is our belief that the onshore hydrocarbon splitting fractions derived from ambient measurements made in Los Angeles are not necessarily representative of the offshore hydrocarbon composition. In fact, the composition of hydrocarbon mixtures released offshore might contain a somewhat larger fraction of less reactive hydrocarbons than the onshore emissions dominated by mobile sources. The implications of using a "hotter" hydrocarbon split offshore, in specifying the initial conditions, will result in higher onshore ozone concentrations and will tend to minimize the effects of the OCS emissions on the onshore impacts. Unfortunately, only limited offshore hydrocarbon measurements are available. Therefore, to gain a better understanding of how the RAPT model will respond to various hydrocarbon splitting fractions when specifying the initial conditions, a sensitivity analysis needs to be performed. This will allow the ARB staff to properly interpret the impacts of the OCS emissions (assuming that it can be demonstrated that a trajectory can maintain its integrity over the simulation period).

6) Section 3.2 in Appendix B of the EIS discusses the test results of the RAPT model validation for a single trajectory in the SCAB for June 27, 1974, where the highest ozone concentration was 0.51 ppm recorded at Upland. The EIS goes on to say that, after adjusting the initial conditions for the start of the trajectory by using the DOLA station data, the RAPT model predicted a high ozone concentration of 0.46 ppm at Upland vs. 0.51 ppm measured.

18.20.I(25)

The EIS then concludes that, based on this one result, the RAPT model can predict concentrations of ozone with acceptable accuracy. This is an erroneous interpretation of the modeling results. The analysis was made for a single trajectory on a single day with high initial concentrations of hydrocarbons and NOx. As previously mentioned in our review, if high initial concentrations of hydrocarbons and NOx are used to drive the model, they, rather than emissions, will tend to dominate the calculation. Impact predictions of this sort can be viewed with confidence only when emissions have an important role. Other trajectories, not only for a single day but for multi-day episodes, must be constructed and the results evaluated. The conclusions reached about the reasonableness of the RAPT model's ability to predict ozone concentrations are not adequately supported by this single result.

18.20.I(26)

In summary, based on the information contained in the draft EIS, it is our belief that the results presented are of questionable validity. The modeling approach used tends to underestimate the onshore air quality impacts from OCS emissions. Furthermore, the draft EIS lacks the detailed technical documentation on the RAPT model formulation necessary to fully evaluate the scientific bases of the modeling analyses.

18.20.I(27)

cc: Andrew Ranzieri, Manager
Air Quality Modeling Section

7-145

April 15, 1981

Mr. John Lane
Pacific OCS Office
1340 W. Sixth Street, Room 200
Los Angeles, CA 90017

Dear Mr. Lane:

Subject: Comments on Draft Air Quality Analysis of the Potential
Impact of OCS Lease Sale No. 68 Offshore Southern California

ATTACHMENT II

Introduction

The Department of Interior proposes to offer for lease 221 tracts off the Southern California coast from Point Conception to San Diego for oil and gas exploration and development. The tracts are typically 3 miles by 3 miles square, and range from 2 to approximately 80 miles from shore. It is estimated that 123 million barrels of oil and 280 billion cubic feet of gas are recoverable from Lease Sale No. 68. Eight to ten production platforms are expected to be constructed. Platforms located near shore will use pipelines to transport the gas and oil to onshore processing facilities, whereas platforms located far offshore will reinject the gas and use tankers or barges to transport the oil. Emissions resulting from the development of this lease sale are expected to impact three California Air Basins: South Central Coast, South Coast, and San Diego.

General Comments

Despite the massive increases in emissions associated with the lease sale, the draft concludes that these emissions will be within the exemption levels of the U.S. Department of Interior (DOI) air quality regulations. We are concerned that no mitigation will be imposed to reduce the impact resulting from these activities.

18.20.II(1)

The draft contains a number of misconceptions and errors which lead one to the erroneous conclusion that the DOI air quality regulations will provide sufficient air quality protection by requiring appropriate mitigation mitigation measures. The actual air quality impact could easily be greater than that estimated in the draft. For example, the draft assumes that the San Diego Air Basin is nonattainment for NO₂; however, it is quite likely that

18.20.II(2)

13

14

April 15, 1981

this air basin will be redesignated as an attainment area for this pollutant in the near future. Since DOI air quality regulations require less mitigation for OCS emissions impacting an attainment area, the allowable emissions will be much greater than indicated in the draft.

The draft appears to assume that development drilling emissions must be offset if "significant." As we understand the DOI air quality regulations, it is highly unlikely that these emissions would have to be offset, regardless of how significant they may be, since they will be emitted from a temporary facility.

18.20.II(3)

The draft appears to discount the effects of some emissions because of dispersion or relatively low annual average emissions. This dispersion discussion should have taken into account the fact that virtually all the emissions would be transported into nonattainment areas. In such areas, any increase in emissions would be significant. In addition, the use of annual average emissions tends to neglect effects of activities of limited duration on short-term ambient air quality standards.

18.20.II(4)

Due to the short review time, we are not addressing the modeling analysis and assumptions found in the draft. We may have further comments in the future.

Specific Comments

1. On page IV-22, in discussing hydrocarbon levels in the South Central Coast Air Basin, the draft indicates the 1979 maximum hourly value was 120 parts per million. The correct value is 120 parts per ten million.

18.20.II(5)

2. On page IV-24, paragraph (b), while discussing the geographical boundaries of the South Coast Air Basin, reference is made to Figure III-1. The intended reference should be Figure III-2.

18.20.II(6)

3. On page IV-29, and in Table IV-1, the San Diego Air Basin is described as nonattainment for Nitrogen Dioxide (NO_2), and the impact from Lease Sale No. 68 is based on the assumption that offsets would be required of major "significant" sources of this pollutant.

On March 26, 1981, a request was submitted to the U.S. Environmental Protection Agency to redesignate the San Diego Air Basin as "attainment" for NO_2 . This redesignation will likely be granted in the near future, and will substantially reduce, if not eliminate, the offset requirements. Even after the redesignation, the air basin will only be marginally in attainment. It is possible that the added emissions from OCS activities in combination with existing NO_2 concentrations could result in violations of the national ambient air quality standard for NO_2 .

18.20.II(7)

4. On page V-3 and again on page V-23, the draft indicated that emissions associated with the construction, towing, and installation of drilling rigs are "negligible" and "minimal." The meaning of such words in this context is unclear, and these statements should be substantiated.

18.20.II(8)

April 15, 1981

There are a number of types of drilling rigs used for exploratory drilling. The draft does not, however, compare or estimate emissions associated with these different types of rigs. In addition, there is no information on which types of rigs will be used in each respective OCS zone.

5. On page V-4, in describing miscellaneous intermittent sources during the exploration phase, the draft states: "Normally, emissions from these operations would not be significant when compared to more continuous sources of pollutants." The draft appears to use annual average emissions exclusively in determining significance, and does not acknowledge the fact that an intermittent source could have a substantial impact on short-term (one hour to one day) ambient air quality standards, and that such impacts may not be reflected in annual average emissions.

18.20.II(9)

6. In the discussion of support and transport activities, the draft at numerous locations states that (for many cases) the largest amount of emissions will occur during transit. Even though substantial quantities of pollutants would be emitted, the draft indicates that the impact on the onshore air quality would be minimal because the emissions would be dispersed over a large area. It should be noted that no responsible air pollution control agency subscribes to the concept of dilution as a primary strategy for mitigation, and the draft should have indicated that any increase in emissions transported into a nonattainment area is significant.

18.20.II(10)

7. On pages V-5 and V-26, the draft indicates that emissions associated with pipeline installations are "relatively small" or insignificant. This is apparently based on averaging the emissions over a year. Although the annual emissions could be relatively small due to the short duration of such activities, on a daily or hourly basis these emissions are expected to be substantial and the draft should have emphasized this point.

18.20.II(11)

The report indicates daily emissions are approximately of the same magnitude as those occurring during platform installation. Comparison of data found in Appendix A concerning platforms A, B, C, D, and C-1, however, indicate that maximum daily emissions associated with pipeline installation are at least 50% greater than the emissions associated with platform installation. Such an increase does not appear to qualify as "approximately of the same magnitude."

18.20.II(12)

8. On page V-23, emissions associated with development drilling on production platforms are counted in determining whether the DOI exemption levels are exceeded and offsets are required. However, it is quite likely that most development and production plans will claim that development drilling will occur for a period of less than three years. Any activity which lasts for less than three years is considered a temporary facility and no control beyond BACT would be required by the DOI air quality regulations. Therefore, to be consistent with the regulations, the draft should not include emissions from drilling in the determination of offset requirements.

18.20.II(13)

April 15, 1981

9. On page V-31, the Draft assumes that a platform with an offshore gas processing facility will have one-third more components than a comparable platform without a processing facility. The basis for this assumption is not clear, and the draft should have clarified this point.] 18.20.II(14)

10. On page V-36, while discussing inert modeling emission inputs, it is noted that "emissions from support vessels and barges, including activities such as transit, loading at the platform or in port, and unloading in port, were considered when the timeframe permitted."] 18.20.II(15)

The intent of the phrase "when the timeframe permitted" is unclear and should be clarified.

If you have any questions, or if we can be of further assistance, please call Greg Allen of my staff at (916) 322-6038.

Sincerely,

Original Signed By

Gary Agli for

Peter D. Venturini, Chief
Regional Programs Division

cc: J. b Stuart
John English
John Bush
Rich Sommerville
Gary Midkiff

ATTACHMENT III

Air Quality Designations for California
as of July 1, 1981

Air Basin County Sub-area	O ₃	CO	NO ₂	TSP		SO ₂	
				Primary	Secondary	Primary	Secondary
<u>North Coast</u>	U**	U**	U**			U**	U**
Del Norte	U	U	U	A*	A*	U	U
Humboldt	U	U	U	A	A	U	U
Mendocino " 5 mile radius in Ft. Bragg	U	U	U	N1 N2	N1 N2	U	U
Sonoma North Coast Basin Portion	U	U	U	A	A	U	U
Trinity	U	U	U	A	A	U	U
Lake County	U**	U**	U**	A**	A**	U**	U**
<u>North Central Coast</u>	N**		A**			U**	U**
Monterey	N	A	A	A	A	U	U
San Benito	N	U	A	A*	A*	U	U
Santa Cruz	N	U	A	A	A	U	U
<u>San Francisco Bay Area</u>	N**	N**	A**			A**	A**
Alameda	N	N	A	A	A	A*	A*
Contra Costa	N	N	A	A	A	A*	A*

- N = Nonattainment A = Attainment U = Unclassified * Includes Projections **Area-Wide Designation
1. ARB submitted request to EPA 6-23-80 to redesignate all of Mendocino County, except for 5 mile radius surrounding Fort Bragg, to Attainment.
 2. Georgia Pacific submitted, June 1981, a study and request to EPA to redesignate 5 mile radius surrounding Fort Bragg to Attainment.

as of July 1, 1981

Air Basin County Sub-area	O ₃	CO	NO ₂	TSP		SO ₂	
				Primary	Secondary	Primary	Secondary
Marin	N	N	A	A	A	A*	A*
Napa	N	N	A	A	A	A*	A*
San Francisco	N	N	A	A	A	A*	A*
San Mateo	N	N	A	A	A	A*	A*
Santa Clara	N	N	A	A	N	A*	A*
Solano (SFBA Portion)	N	N	A	A	A	A*	A*
Sonoma (SFBA Portion)	N	N	A	A	A	A*	A*
<u>South Central Coast</u>							
San Luis Obispo Salinas Valley	A	A	A	A	N	U*	U*
San Luis Obispo Non-Salinas Valley	A	A	A	U	U	U*	U*
Santa Barbara AQMA	N	N	A	A	A	U	U
Santa Barbara Non-AQMA Coast side	N	A	U	N	N	U*	U*
Santa Barbara Non-AQMA	N	A	U	U	U	U*	U*
Ventura Northern Portion	N1	A	A	U1	U1	A*	A*
Ventura - South of Los Padres Nat'l. Forest	N	A	A	N	N	A*	A*
Channel Islands	U	U	U	U	U	U	U

N = Nonattainment A = Attainment U = Unclassified *Includes Projections

1. 4-30-81 letter to EPA, ARB requested redesignation to attainment.

Air Quality Designations for California
as of July 1, 1981

Air Basin County Sub-area	O ₃	CO	NO ₂	TSP		SO ₂	
				Primary	Secondary	Primary	Secondary
<u>South Coast</u>	N**	N**	N**	N**	N**		
Los Angeles (S.C. Basin Portion)	N	N	N	N	N	A	A
Orange	N	N	N	N	N	A	A
Riverside (S.C. Basin Portion)	N	N	N	N	N	A	A
San Bernardino (S.C. Basin Portion)	N	N	N	N	N	A	A
<u>San Diego County</u>							
West San Diego County	N	N	N1	N	N	A	A
East San Diego County	N	U	U	U	U	A	A
<u>Sacramento Valley</u>							
Sacramento Metropolitan AQMA	N**						
Sacramento	N	N	A	A	N	U	U
Solano (Sacramento Valley Portion)	N	U	U	U	U	U	U
Yolo	N	U	U	U	U	U	U
Sacramento Valley Non-AQMA	N**						
Butte	N	N	A	U	U	U	U

N = Nonattainment A = Attainment U = Unclassified **Area-Wide Designation

1. 5-6-81, EPA NPRM for Attainment.

Air Quality Designations for California
as of July 1, 1981

Air Basin County Sub-area	O ₃	CO	NO ₂	TSP		SO ₂	
				Primary	Secondary	Primary	Secondary
Colusa	U	U	U	U	U	U	U
Glenn	U	U	U	U	U	U	U
Shasta (Sacramento Valley Portion)	U	A	U	U	U	U	U
Sutter	N	U	A	U	U	U	U
Tehama	A	A	A	U	U	U	U
Yuba	N	U	U	U	U	U	U
<u>San Joaquin Valley</u>	N**			N**	N**		
Fresno FCMA	N	N	A	N	N	U	U
Non-FCMA		A					
Kern (Oilfields Area)	N	N1	A	N	N	N2	N2
Kern (Remainder of SJVAB Portion)	N	N1	A	N	N	N3	N3
Kings	N	U	U	N	N	U	U
Hadera	N	U	U	N	N	U	U
Merced	N	A	A	N	N	U	U
San Joaquin	N	N	A	N	N	U	U
Stanislaus	N	N	A	N	N	U	U
Tulare	N	A	A	N	N	U	U

N = Nonattainment A = Attainment U = Unclassified **Area-Wide Designation

- 6-22-81 letter ^{2a} EPA, ARB requested redesignation to attainment except for Bakersfield Metropolitan Area.
- 4-16-81 letter to ARB, Kern County requested redesignation to attainment.

Air Quality Designations for California
as of July 1, 1981

Air Basin County Sub-area	O ₃	CO	NO ₂	TSP		SO ₂	
				Primary	Secondary	Primary	Secondary
<u>Northeast Plateau</u>	U**	U**	U**	U**	U**	U**	U**
Lassen	U	U	U	U	U	U	U
Shasta	U	U	U	U	U	U	U
Siskiyou	U	U	U	U	U	U	U
Modoc	U	U	U	U	U	U	U
<u>Great Basin Valleys</u>	U**	U**	U**	U**	U**	U**	U**
Alpine	U	U	U	U	U	U	U
Inyo	U	U	U	U	U	U	U
Mono	U	U	U	U	U	U	U
<u>Southeast Desert</u>							
Kern (S.E. Desert Portion)	U	U	U	U	U	U	U
Imperial	N	U	U	U	U	A*	A*
Los Angeles (S.E. Desert Portion)	N	A	A	N1	N1	U	U
Riverside (S.E. Desert AQMA Portion)	N	A	A	N1	N1	U	U
San Bernardino (S.E. Desert AQMA Portion)	N	A	A	N1	N1	U	U
Riverside (Non-AQMA)	U	U	U	U	U	U	U

N = Nonattainment

A = Attainment

U = Unclassified

**Area-Wide Designation

*Includes Projections

1. 2-14-80 letter to EPA, ARB requested redesignation to Unclassified. No EPA rulemaking to date.

Air Quality Designations for California
as of July 1, 1981

Air Basin County Sub-area	O ₃	CO	NO ₂	TSP		SO ₂	
				Primary	Secondary	Primary	Secondary
San Bernardino (Non-AQMA)	U	U	U	U	U	U	U
<u>Mountain Counties</u>		U**	U**			U**	U**
Amador	U	U	U	A*	A*	U	U
Calaveras	U	U	U	U	U	U	U
El Dorado (Non-Lake Tahoe)	N	U	U	A	A	U	U
Mariposa	A	U	U	U	U	U	U
Nevada	U	U	U	U	U	U	U
Placer (Sacramento AQMA Portion)	N	U	U	A	A	U	U
Placer (Non-Tahoe) (Non-Sacramento AQMA)	N	U	U	A	A	U	U
Plumas	U	U	U	A	A	U	U
Sierra	U	U	U	A	A	U	U
Tuolumne	U	U	U	U	U	U	U
Tahoe Basin	A	N	A	A*	A*	A	A

N = Nonattainment

A = Attainment

U = Unclassified

* Includes Projections

**Area Wide Designation

California Coastal Commission
633 Howard Street, 4th floor
San Francisco, California 94105
(415) 543-8555

August 13, 1981

James Watt, Secretary
Department of the Interior
18th and C Street
Washington, D. C. 20240

Dear Secretary Watt:

The California Coastal Commission has reviewed the Draft Environmental Impact Statement (DEIS) for proposed OCS Lease Sale #68 and submits the attached comments for the Bureau's use in preparing the Final EIS.

Briefly, the Commission finds that Alternative 2, which deletes tracts within the Channel Islands National Marine Sanctuary, more closely conforms with the California Coastal Management Program than the other alternatives. We are pleased that the DEIS recognizes that Alternative 2 will help protect this nationally significant sanctuary. We further believe that this alternative is consistent with the Channel Islands National Marine Sanctuary designation whereas other alternatives, including the proposed project, are not. We recommend, however, that the Bureau of Land Management also delete the four tracts and portions of tracts within the Precautionary Area offshore the Ports of Los Angeles and Long Beach, and the tracts within the buffer zone of the Ecological Preserve in the Santa Barbara Channel established by former Secretary of the Interior Hickel as compensation to the City of Santa Barbara after the 1969 oil spill. These additional deletions would go further toward meeting the standards set forth in the Coastal Management Program.

The Commission strongly recommends that the Final EIS analyze the cumulative impacts that could result from Lease Sale #68. The DEIS is inadequate because cumulative impacts have not been fully discussed. Cumulative impacts, especially in the Santa Barbara Channel area, are a major issue in the proposed sale. These impacts could result from the proposed lease sale and from Lease Sale #48. In addition, the recently leased Santa Maria Basin, which is adjacent to the Santa Barbara Channel, will affect OCS-related facilities now used for the Channel OCS activities. Lease Sale #68 would be the fourth sale in the Santa Barbara Channel OCS and the fifth in Southern California, following leasing of the Santa Maria Basin by less than a year. The sale could result in severe impacts to air and water quality, navigation safety, land use, commercial and sport fisheries, and other resources when viewed cumulatively with demands and impacts from previous sales in the area, including the Santa Maria Basin.

The conclusions drawn from the analysis of cumulative impacts should be incorporated into Alternative #4, Delay the Sale. If the cumulative impacts analysis in the Final EIS shows that adverse effects cannot be adequately mitigated, then the Commission, at that time, may decide to recommend delay of the sale.

James Watt, Secretary
August 13, 1981
Page Two

The Commission is also concerned with proposed leasing of the eight tracts directly outside of Santa Monica Bay --122, 123, 128, 129, 136, 138, 145, and 146. Environmental studies prepared by the Bureau of Land Management indicate that winds and currents could carry spilled oil from these tracts into Santa Monica Bay. Leasing of these tracts, therefore, present a substantial risk to the most heavily used beach and recreation area in the county, a risk that may not be warranted when balanced against the benefits of the sale of these tracts. The Commission recommends that the Final EIS include an analysis of the impacts on Santa Monica Bay and the Point Dume area from the leasing of these tracts, particularly the effects on the biological resources, air quality and tourism and recreation industries in the area. Results from this analysis also should be incorporated in Alternative #4, Delay the Sale.

Further, the Commission recommends that the Final EIS include a discussion of potential impacts of leasing in the #68 area on the possible translocation of the southern sea otter to San Nicholas Island. There is no discussion of this issue in the DEIS. The combined federal and state efforts to find an area for the sea otters that would be relatively safe from oil spill threats and that would provide the best chances for the otters' survival deserve consideration in any proposals for OCS leasing in Southern California.

Finally, the Commission recommends that a fisheries training program stipulation, similar to the one included for Lease Sale #53, and a biological stipulation requiring surveys at the time of acquiring of a lease and sharing the survey data with federal and state officials, be included as proposed mitigation measures for Lease Sale #68.

Thank you for the opportunity to make these comments.

Sincerely,

Pete Douglas for
MICHAEL L. FISCHER
Executive Director

MLF:MG:nc

cc: Robin West
William Grant
Darl Greene

CALIFORNIA COASTAL COMMISSION COMMENTS ON THE DRAFT ENVIRONMENTAL
IMPACT STATEMENT FOR PROPOSED OCS LEASE SALE #68

Introduction

The California Coastal Commission exercises planning and regulatory authority for the coastal zone and is the designated coastal management agency to implement the California Coastal Management Program approved under the Coastal Zone Management Act.

The following comments on the Draft Environmental Impact Statement were adopted after two public hearings held by the Commission. The Commission determined that the Draft Environmental Impact Statement inadequately addressed the cumulative impacts of Lease Sale #68, Sea Otter relocation efforts, and the effects of leasing in Santa Monica Bay. Furthermore, measures that may lessen the impact, such as biological stipulations, delay of the sale, deletion of tracts in the vessel precautionary area and Santa Barbara Channel Ecological Preserve Buffer Zone are not evaluated to the proper extent.

Our comments relate to the overall inadequacy of the DEIS. A Final Environmental Impact Statement must respond to these issues. The Commission also addressed the individual alternatives, as discussed below.

Alternative 2. The Commission believes Alternative 2 is the only way to adequately safeguard the rich resources of national importance in the Channel Islands National Marine Sanctuary. Alternative 2, "Modify the Sale", would delete 37 tracts or portions of tracts within 6 nautical miles of the northern Channel Islands and within the boundaries of the Channel Islands National Marine Sanctuary; tracts 41-46, 49-51, 53-58, 87-90, 99-101, 104-105, 108-112, 115-119, 124-125, and 130 would be affected.

Further, and most importantly, Alternative 2 is the only development alternative that can be approved consistent with the Marine Sanctuary Act. The Channel Islands were designated as a marine sanctuary in September 1980, and included hydrocarbon prohibition regulations as integral to the designation. In March 1981, NOAA suspended the regulations and thereby removed the critical regulatory mechanism that it had previously guaranteed would govern the sanctuary. The Commission has previously submitted comments on this action, which are hereby incorporated as a part of these comments. A decision to implement any other development alternative will be inconsistent with the Marine Sanctuary Act.

The DEIS correctly points out that the Channel Islands are major breeding and resting areas for many species of seabirds and pinnipeds. The endangered brown pelican breeds on Anacapa Island and Scorpion Rock off Santa Cruz Island, and as a diving bird, is vulnerable to spilled oil. Leasing of tracts within six miles of the Channel Islands presents a substantial and unsupportable risk to endangered species. To protect this species, tracts within six nautical miles of the Channel Islands should not be offered for sale, a mitigation measure provided by Alternative 2. The six nautical mile figure is based on the EIS for Lease Sale #35.

Outside Alaska, the only established colony of the northern fur seal in the U.S. is on San Miguel Island. The fur seal is extremely vulnerable to oil spills. Any matting of its fur adversely affects its ability to maintain its body temperature. San Miguel Island supports breeding and haul-out areas for several other pinniped species, elephant seals and sea lions among them. In fact, as the DEIS points out, 40% of the world's total of sea lions and northern elephant seals breed on the Channel Islands, especially San Miguel Island.

The DEIS states that in the absence of an oil spill, no significant changes in seabird or marine mammal populations should occur. This does not account for disturbances from noise or intruding human behaviour close to these habitats. Whales in particular are known for their avoidance of human activity. The 6-mile buffer provided by Alternative 2 would protect these species from disturbances of oil and gas activities. A notable omission in the DEIS is a color map of the marine resources in the proposed lease area. This should be included in the FEIS.

A Commission study on oil spill recovery technology has shown that recovery is ineffective in waves over six feet and currents greater than one knot, conditions present as much as 25% of the year in Southern California. The DEIS predicts one spill over 1,000 barrels from Lease Sale #68, a risk to the resources in the Channel Islands National Marine Sanctuary that makes leasing of tracts within the Sanctuary unjustified.

The DEIS states:

"The adoption of Alternative 2 would result in a significant reduction in potential impacts to intertidal and subtidal benthic organisms, marine mammals, and seabirds. Potential impacts to recreational and cultural resources would be reduced slightly. For the other resource categories discussed in this document, potential impacts are not expected to be significantly different from those described for Alternative 1 [the DOI proposal]."

"It is important to note that the unusual and valuable intertidal, subtidal, benthos, pinnipeds, seabirds, recreational, and cultural resources were major reasons the area was designated as a National Marine Sanctuary and a National Park. Adopting Alternative 2 (deleting tracts within the sanctuary) would be a valuable step in maintaining the characteristics and qualities that were prime reasons for designating the Northern Channel Islands as a marine sanctuary and a National Park." (page vi)

And further:

"deleting [these tracts] will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours."

This is the first time that the Pacific OCS Office of the Bureau of Land Management, which prepares this document for the Department of the Interior, has argued in support of an alternative to DOI's proposal. Although the DEIS lacks direct language stating that Alternative 2 is the "preferred alternative", the message is clear that compared to Alternative 1, this alternative is much less environmentally damaging at essentially no cost.

Precautionary Area. The Commission urges that the four tracts within the Vessel Precautionary Area offshore the Ports of Los Angeles and Long Beach be deleted from the proposed lease sale. The DEIS fails to address the advantages of deleting tracts within the Vessel Precautionary Area offshore the Ports of Los Angeles and Long Beach. This convergence of several major vessel traffic routes from northern and southern California, Alaska and Asia could present a threat to the safe navigation of vessels, both OCS-related and other, in this area, if OCS structures are located within tracts 164-167. The congestion in this area could easily lead to collisions and ramblings between OCS-related vessels or structures and other vessels entering or leaving the Ports of Los Angeles or Long Beach.

Santa Barbara Channel Ecological Preserve Buffer Zone. The Commission urges that tracts within the Buffer Zone be deleted from Lease Sale #68. The DEIS does not address this issue. The Preserve and Buffer Zone were established by former Secretary of the Interior Hickel as compensation to the City of Santa Barbara for the damage it suffered from the 1969 oil spill. The public trust generated from this executive act should not be violated in the offering of these tracts to the oil industry in Lease Sale #68 or any other lease sale. The tracts should remain offlimits to offshore oil development and be deleted from Lease Sale #68.

Santa Monica Bay. The Commission recommends that the leasing of the twelve tracts located at the Santa Monica Bay entrance be fully studied in the Final EIS. Furthermore, if this analysis indicates that the coastal resources will be harmed, the DOI should delete these twelve tracts. Although former Secretary of the Interior Andrus deleted most of the tracts in Santa Monica Bay last year, twelve tracts remain as potential sale tracts--tracts 122, 123, 128, 129, 136, 137, 138, 145, 146, 147, 151, and 152. Offshore oil development on these tracts could threaten the sensitive ecosystems of Malibu Lagoon and the bay, and present a significant risk to the heavily used beach and recreation areas within the Bay. Environmental studies prepared by the Bureau of Land Management indicate that the winds and currents in this part of the ocean could carry spilled oil from these tracts directly into the Bay and onto the beaches. New geologic hazard studies also show instability in the formations under these tracts.

Sea Otter Translocation Study. The Commission recommends that the Department of the Interior include an evaluation of sea otter translocation efforts in the FEIS and take no action that would preclude full consideration of San Nicholas Island as a potential translocation site. The DEIS did not address this issue. The United States Fish and Wildlife Service, in consultation with the California Department of Fish and Game and the Marine Mammal Commission, is in the process of developing a map of the Pacific coast which will determine the best possible sites for potential relocation of the sea otter. The sea otter currently ranges from Santa Cruz south to Pismo Beach, an area virtually encompassed by proposed offshore oil development in Lease Sales #53 and 73. The general consensus of all involved government and private interests is that one or more sea otter trans-locations to areas less vulnerable to oil spills than the current range will provide the best chance for this threatened species to recover non-threatened status. San Nicholas Island in the Outer Banks section of Lease Sale #68, is an area of high interest as a possible trans-location site.

Lease Sale Stipulations. The FEIS should correct an omission in the DEIS of discussion of lease stipulations on fisheries training programs and biological surveys. The fisheries training program included for Lease Sale #53 was strongly supported by the Commission and should be included in this proposed sale as well because of the important fishing areas in the Channel, San Pedro Bay and the Inner Banks. The training program, informing personnel on the oil rigs of the

potential conflicts between their operations and commercial fishing and how best to avoid these conflicts, is a positive step taken by DOI in the past few years. It should definitely be a standard lease stipulation in any OCS area with commercial fishing activity as an appropriate mitigation measure.

The Commission recommends that the DOI adopt the biological stipulation recommended by the State of California for Lease Sale #53, calling for surveys of biologically sensitive areas at the time of leasing and sharing of the information with state officials, and include it in the FEIS as well. The present procedure of waiting until a lessee submits a Plan of Exploration to drill an exploratory well, having the lessee perform the survey if the U.S. Geological Survey "has a reason to believe" a biologically sensitive area exists, and then submitting the information to the U.S.G.S. does not insure the best possible surveys or resulting mitigating measures.

Other stipulations that could mitigate adverse impacts on marine and coastal resources discussed in the DEIS should also be considered by DOI. For example, the FEIS should consider requirements for special methods for disposal of drilling muds and cuttings and prohibitions on drilling in adverse weather conditions in which oil spill recovery equipment may be ineffective.

Cumulative Impacts. The DEIS is severely inadequate in its discussion of cumulative impacts. The Commission strongly urges the DOI to expand its consideration of these impacts in light of previous OCS sales and the small degree of exploratory activity on leases in Southern California and the Santa Maria Basin. In particular, the FEIS should discuss the following topics in a separate section on cumulative impacts:

1. Commercial fisheries. OCS activities directly conflict with commercial fishing activities in pre-emption of fishing space, berthing space and potential damage from oil spills. Exploratory drilling vessels can pre-empt fishing activities for up to 120 days per well, while production platforms eliminate fishing areas for as much as 25 years. Leasing activities from Lease Sales #35, 48, and 53, and the two OCS sales in the Channel in 1966 and 1968 combine to present an increasing problem of availability of commercial fishing areas.

2. Onshore Facilities. Although the DEIS on Sale #68 states that no new processing facilities or refineries would be required onshore from OCS activities associated with that sale, the DEIS fails to assess the demands from Lease Sale #53 in the Santa Maria Basin for onshore facilities such as processing and service base needs. The cumulative impacts on availability of refineries' and processing facilities' capacity to process the high-sulfur, heavy crude oil expected to be found in much of the 68 and 53 area, must be addressed in the FEIS. Inability of refineries to process this lower-grade oil in the past has resulted in the shipping of the crude to the Gulf states or to Japan. Production of crude from #68, then, may well not back out foreign imports of oil as the DEIS claims.

3. Marine Resources. The DEIS correctly points out that the Channel Islands are major breeding and resting areas for many species of seabirds and pinnipeds. The endangered brown pelican breeds on Anacapa Island and Scorpion Rock off Santa Cruz Island, and as a diving bird, is vulnerable to spilled oil. Although the Biological Opinion of the U.S. Fish and Wildlife Service, attached to the DEIS, does not find that this proposal to lease this area would jeopardize the survival of the brown pelican, it does note that young pelican fledglings often congregate in large numbers on the water surface near the colony and could therefore be severely harmed or killed if an oil spill occurs during the breeding season near the islands. Fish and Wildlife Service does state that the present resource estimates

indicate that future development and production operations may be likely to jeopardize the potential recovery of the brown pelican. The FEIS must, therefore, address the cumulative impacts of leasing activities in the Santa Barbara Channel and Santa Maria Basin. As stated in the oil spill analysis section, Anacapa Island has a 78% probability of being hit within 30 days if a 1,000 barrel oil spill occurs, and the predictions are that one such spill would occur during the life of Lease Sale #68. And San Miguel Island, supporting the only established northern fur seal colony in the U.S. outside Alaska, would face a 41% chance of being hit by a 1,000 barrel spill within 30 days, according to the DEIS. This presents a substantial and unsupportable risk to endangered species that the FEIS must address in terms of cumulative impacts.

4. Oil Spills. One spill over 1,000 barrels is expected from Lease Sale #68 alone; however, 23 spills are predicted from Lease Sale #68 plus existing leases and imports and 12 spills over 10,000 barrels. The Commission has repeatedly found that oil spill recovery technology is ineffective in waves over 6 feet and currents greater than 1 knot, conditions prevailing in southern California about 6-25% of the time. OCS activities from the previous 4 sales in southern California and from Lease Sale #53 pose much greater risks of spills beyond control of state-of-the-art equipment than the DEIS leads the reader to believe in the analysis of Lease Sale #68 activities alone. Can the oil spill cooperatives in southern California adequately respond to spills that may be occurring along 300 miles of coastline and as far out to sea as 140 miles? This should be addressed in the FEIS. The Five-Year OCS Leasing Program predicts almost 17 spills over 1,000 barrels for southern California, or a spill every two years, for the proposed leases in southern California. This does not include existing leases. In other words, from a statistical point of view, an oil spill during the life of these sales is a certainty.

The DEIS states that oil production would be barged from the Outer Banks and pipelined from the Santa Barbara Channel and the Inner Banks. As shown in the DEIS, the risk of spills from barging and tankering is much higher than from pipeline transport. As with past Environmental Impact Statements on proposed OCS lease sales, the oil spill trajectory analysis section is riddled with jargon and technical language, making it very difficult to understand. The background Reference Paper meant to explain the methodology used does not help. Also, contradictions in oil spill prediction figures appear in the DEIS. For example, figures for Anacapa Island differ for the land segment analysis and the target area analysis; in the land segment analysis, the DEIS states that the chance of a spill hitting the island within 30 days is 56%, while in the target area section, the figure is 78%. This discrepancy should be eliminated in the FEIS.

The DEIS contains a statement made by the U.S. Coast Guard that state-of-the-art in technological development of oil spill containment and cleanup equipment has proceeded to the point where it is realistic to expect successful operation of open ocean recovery equipment in 8 to 10 foot seas and in winds of at least 20 knots (p. 4-16).

Studies by the staff of the Coastal Commission indicate that this statement, if accurately reported, is totally unrealistic. Limits of equipment effectiveness, as stated above, are more in the range of 6-foot waves and 1 knot currents. This statement by the Coast Guard must be supported if it is to be included in the FEIS.

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5. Navigation. Risks of collisions between navigating vessels and OCS structures or other vessel traffic should be analyzed in the context of cumulative impacts from the past four sales in southern California and Sale #53 in the Santa Maria Basin, and not just from Sale #68 alone. Increased OCS activities will lead to increased vessel activity to support exploration and development. Crew and supply boats servicing the drilling rigs and platforms will be presenting greater interference with ship traffic in the Channel and along the southern California coast Vessel Traffic Separation Scheme (VTSS) when viewed as a result of several lease sales, than from one alone. As stated in the National Maritime Research Center's draft report on the "Santa Barbara Channel Risk Management Program", nor structures, whether temporary or permanent, should be permitted within a VTSS, and, further, that objects at the edge of the sealane perturb traffic flow. The discussion of cumulative impacts of these types of hazards to vessel traffic flow is inadequate.

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6. Drilling Muds. The DEIS failed to address the cumulative impacts of mass loading of drill muds discharges on the OCS. The FEIS should include this analysis. Mass loading of compounds used in drilling muds into the Southern California Bight could cause severe impacts on bottom dwelling organisms and other species, although this issue is still under study. In the Santa Barbara Channel alone, assuming that 230 million barrels of oil are found and produced as projected by DOI, 117,105,000 barrels of drilling muds will have to be disposed of from Lease Sale #68 activities alone. The Outer Banks, with its sensitive coral reefs, could receive 68,471,000 barrels of drilling muds, a probable impact since it would be extremely costly to barge these muds to shore from a point 140 miles away.

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7. Endangered Species. The FEIS should correct the inadequate discussion in the DEIS of cumulative impacts on endangered species. The potential impacts to threatened and endangered species from Lease Sale #68 and existing leases "are significant...and anticipated to continue to stress the endangered and threatened species of the Southern California Bight." (p. 4-87 of the DEIS). Moreover, "some of the key characteristics of the Northern Channel Islands, which were primary factors in having the area designated a marine sanctuary (and a National Park) will probably be significantly altered by cumulative impacts." (p. 4-96a)

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Alternative #4 - Delay the Sale. The DEIS presents an alternative to delay the sale an indefinite period of time, Alternative 4. DOI presents little information on the types of impacts that would be eliminated or mitigated by adoption of this alternative and instead focuses on the environmental studies information that would be available if the sale were postponed. The discussion of this alternative should consider the benefits of postponement of the sale to allow more time to assess the cumulative impacts on the Santa Barbara Channel from leasing of the Santa Maria Basin and Lease Sale #48, and to determine appropriate mitigation measures. Therefore, a summary of the analysis on cumulative impacts should be included in the Delay the Sale option, to indicate whether the cumulative impacts from five past OCS sales can be satisfactorily mitigated through lease stipulations or otherwise, or whether no such mitigation is possible, supporting a decision to delay Lease Sale #68. Also, the discussion of this alternative must be expanded in the FEIS to include the conclusions from the analysis of the impacts of leasing on Santa Monica Bay tracts.

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emorandum

Huey Johnson
Secretary for the Resources Agency

Gary Midkiff
Governor's Office of Planning and Research

Date: July 30, 1981
Subject: Draft Environmental
Impact Statement on
Proposed OCS Lease
Sale No. 68

Huey Johnson
Gary Midkiff

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July 30, 1981

Department of Conservation—Office of the Director

The California Department of Conservation (CDC) has reviewed the Draft Environmental Impact Statement (DEIS) on the Proposed Outer Continental Shelf (OCS) Oil and Gas Lease Sale No. 68 prepared by the U. S. Department of Interior (DOI). This sale is the second which is proposed pursuant to the Five-Year OCS Lease Sale Schedule, the first being OCS 53. The following comments are in no way intended to be construed in a position to supersede the position CDC has asserted in its challenge of DOI's approval of the five-year leasing program, State of California v Cecil Andrus, U.S. Secretary of the Interior. The CDC's specific comments to this latest proposal are summarized as follows:

A. REOFFERING OF TRACTS FROM LEASE SALE 48

At least sixteen tracts in the Santa Barbara Channel being offered in Lease Sale 68 were first proposed for lease in Sale 48. Many were ultimately withdrawn from the sale by DOI due to potential geologic hazards problems.

RECOMMENDATION: DOI should explain in the FEIS why these tracts have been reoffered. For the ones withdrawn from sale 48 due to geologic hazards DOI needs to specify stipulations which will mitigate the hazards. In the tracts where there are no significant hazards, DOI should supply evidence to support this finding.

B. USGS REPORT IN PREPARATION

The regional and local geological hazards information relied upon for the DEIS assessment is not disclosed. While the DEIS makes reference to the U. C. Richmond study on geologic hazards and constraints it also acknowledges that the study is still in preparation. It is unclear if the results of the study were used for the DEIS and, since they are not available for review, it is impossible to determine if they are complete or accurate.

RECOMMENDATION: The FEIS for lease sale 68 should clarify whether the Richmond study was relied upon and, if so, to what extent. Further, whatever geologic hazards information was utilized should be made available to the State of California to permit evaluating the conclusions DOI has reached.

C. LACK OF GEOLOGIC HAZARD INTERPRETATION

Little interpretation or analysis was performed on the geologic hazards data presented in the DEIS. The impact of this data on possible oil-recovery operations is undeveloped and yet potentially significant. Tract-specific leasing stipulations, tract deletions, platform locations, pipeline locations, are glossed over. An extrapolation by the CDC of the DEIS Geologic Hazards map enabled CDC to prepare a tract specific interpretation which indicates significant geologic hazards within 192 tracts. From this preliminary analysis, 41 tracts are identified as having 3 or more geologic hazards each.

RECOMMENDATION: Unless DOI is relying upon more thorough and updated information which shows these hazards do not exist, we recommend a thorough analysis be developed and tracts with geologic hazards either be deleted or be considered for leasing only with specific stipulations which mitigate the potential hazards.

D. OIL SPILL PROBABILITY ANALYSIS

The oil spill probability analysis in the DEIS does not include the impact of pipeline or platform failure due to geologic hazards. The oil spill probability analysis appears to be based on geologic data of the Gulf of Mexico, where geologic, seismological, and oil operation conditions differ significantly from those of the Lease Sale 68 region.

RECOMMENDATION:

- 1) The results of complete geologic hazards analyses for conditions in the OCS of California should be employed in determining the probability of oil spills related to petroleum production from specific areas.
- 2) The DOI should perform a detailed fault hazards study for the lease sale area, including accurate locations of all active faults, and a determination of the maximum credible earthquakes and ground acceleration for each tract locality.

- 3) The seismic information from the completed analysis should be relied upon to develop stipulations to be required before permitting the development of tracts not deleted.

E. SEISMIC HAZARDS EVALUATION

There is no indication that DOI has undertaken a detailed seismic hazards evaluation to establish design criteria to mitigate seismic hazards.

RECOMMENDATION: We urge that seismic analysis be incorporated as part of the analysis of sediment instability in all tracts. As in our comments on the DEIS for Lease Sale 53, we recommend use of a methodology to obtain these seismic factors. This analysis should include the effect of earthquakes, submarine landslides, slumps and liquefaction, as well as the magnitude and frequency of recurrence of earthquakes.

F. FUTURE GEOLOGIC INFORMATION

The DEIS does not explain how future geologic hazards information and analysis will be used in determining tract development conditions; pipeline routes free of topographic irregularities, active faulting, and areas of sediment instability; calculations of oil spill probability and its environmental consequences; or drill-site location decisions. The growing number of research projects in the Outer Continental Shelf region will steadily add to the state of knowledge of geologic and seismic hazard conditions. Future decisions concerning all aspects of Lease Sale 68 should be made with full awareness and use of new information.

RECOMMENDATION: Lease stipulations should provide for integration of information as it is obtained whether at the exploration or development stages. In addition, mitigation measures should respond to information as it becomes available.

G. COOPERATIVE REVIEW OF GEOLOGIC HAZARD AND RESOURCE INFORMATION

Direct State participation in the review and analysis of proprietary geophysical, geological, and engineering data and sharing of proprietary data would alleviate many doubts that exist concerning the present analytical procedure.

RECOMMENDATION: CDC recommends that the Bureau of Land Management and the U. S. Geological Survey meet and work with state officials involved with oil and gas resource analysis to develop mutually acceptable resource estimates of proposed OCS lease areas, or to allow state officials to review, along with the supporting data, resource estimates that are now unilaterally completed by the USGS.

H. ENFORCEMENT OF REGULATIONS OF OCS ACTIVITIES

In the widely spaced tracts of lease sale 68 and 53, the CDC is concerned that sufficient staff be made available for all inspections. If the five-year lease schedule is accelerated, it would present even more of a burden.

RECOMMENDATION: The FEIS should describe and analyze the adequacy of DOI's existing regulatory and inspection program. The FEIS should also discuss how the proposed lease sale will affect the DOI's inspection program and if the program is adequate. If there is any question as to the adequacy of this program, consideration should be given to a cooperative regulatory program between the State and the USGS to ensure that OCS operations are carried out in a safe and acceptable manner.

I. SHALLOW OIL AND GAS STIPULATION

The DEIS for lease Sale 68 does not include a standard leasing stipulation for tracts affected by shallow gas/geopressure zones. Yet, the DEIS indicates the location of areas of shallow gas zones and oil and gas seeps which impact lease tracts.

RECOMMENDATION: We recommend that a leasing stipulation for tracts affected by this potentially hazardous condition be included in the EIS assessment and leasing requirements for Lease Sale 68 tracts.

The following are the detailed comments of the CDC on the DEIS for Lease Sale 68 as prepared by the DOI.

A. OCS LEASE SALE 48 TRACTS:

A number of the tracts in the Santa Barbara Channel being offered for lease in Lease Sale 68 were initially proposed for lease in Sale 48. Many of the tracts, including 13, 18, 19, 25-30, 36-39, 47, and 60-63, were ultimately withdrawn from the 1979 sale by DOI. The Secretarial Issue Document for Sale 48 indicates that at least 9 tracts in the Channel were withdrawn from the sale for geologic reasons (slope stability problems). In the DEIS for Sale 68, DOI did not indicate the reasons for the deletion of these tracts from lease sale 48. However, the Geological Hazards map accompanying the DEIS for Sale 68 also indicates slope stability problems.

The DEIS for Sale 68 gives no explanation or justification for reoffering these tracts. The DOI should indicate the specific tracts

being reoffered, why they were originally deleted, and why they have been reoffered. For the tracts from Sale 48 which were deleted because of geologic hazards, the DOI should indicate in the FEIS the stipulations that will be applied to mitigate the hazards.

B. USGS REPORT IN PREPARATION

The regional and local geological hazards information relied upon for the DEIS assessment is not discussed. While the DEIS makes reference to a report by W. C. Richmond, et al., Geologic Hazards and Constraints in the Area of OCS Oil and Gas Lease Sale 48, Southern California, the Geologic Hazards map for Lease 68 indicates the study is still in preparation.

It is not clear as to whether the results of this study were available at the time the DEIS was developed. As such, it is not clear if the DEIS assessment of the effect of geologic hazards, and their relation to oil spills probabilities, used the results of the new information. Therefore, the DEIS evaluations may not be complete or accurate.

The final EIS (FEIS) for the lease sale, should clarify whether the Richmond study is being used and to what extent. Further, whatever study is being used should be made available to permit review of the geologic hazards data. The Richmond study would constitute new information relevant to environmental concerns and may prove important to the lease sale decision of certain tracts.

C. LACK OF GEOLOGIC HAZARD INTERPRETATION

The geologic hazards data that are available are presented in the DEIS with little or no interpretation or analysis as to their impact on possible oil-recovery operations -- possible tract-specific leasing stipulations or tract deletions, platform locations, pipeline locations.

The DEIS discusses geologic hazards only qualitatively and briefly, on pages 3-4 through 3-7. The Geologic Hazards map, covering the entire Lease Sale 68 region at scale one inch equals 12 miles, shows the locations of the principal fault zones, areas of seafloor instability, and the epicenters of seismic events larger than magnitude 4. Another map, at the same scale, shows the approximate location of shallow gas zones and surface (seafloor) oil and gas seeps, indicating areas which could pose potential hazards to well drilling activities.

These data provide only a general picture of the types of geologic problems that exist in the Lease Sale 68 area. They are not specific enough to identify the magnitude of impact on oil-recovery operations at particular locations. Further, it is uncertain as to whether the

DEIS visuals data are accurately located to be usable in evaluating specific tracts for assignment of pre-sale leasing stipulations because of geologic hazards.

The results of the completed geologic hazards study by Richmond and any other information should be used to identify tracts which, as a result of significant geologic hazards, require special leasing stipulations (DEIS, pages 1-36 to 1-38, Standard Lease Stipulations, Geological Stipulations), or, where warranted, to propose tract deletions due to unmitigable severe conditions. Among, but not limited to, the types of detailed information that DOI should have at this stage of the lease sale planning process, in order to facilitate evaluation of the degree of threat to potential exploration and development activity posed by the various hazardous conditions are:

- o thickness/depth and extent of areas of submarine sediment creep, slumping and sliding, coherency of the underlying material, and the degree and recency of active failure in the various tracts;
- o the potential for submarine landslides to affect areas downslope from the actual failure area;
- o in areas of active faults and shallow faulting, the recency of faulting, the potential for recurrence of movement, the amount of offset potential and whether it will be oblique, horizontal or vertical movement; the characteristics of sediments overlying the faults, to enable a determination whether offset will propagate to the seafloor or will be taken up as folding or plastic deformation within the sediments;
- o the maximum earthquake potential and associated ground shaking for major faults to assess the potential for liquefaction and other seismically induced slope failure in unstable tract areas;
- o characteristics of unconsolidated surficial sediments, including thickness, engineering (foundation) characteristics and properties, and the potential for liquefaction and other induced slope failure; and
- o in areas of oil and gas seeps, the thickness of overlying sediments and the degree of fracturing, etc., of underlying bedrock.

In the tabulation attached to this review, CDC has from the information presented in the DEIS identified particular Lease Sale 68 tracts which we feel should be identified under the several geological stipulations of the standard lease stipulations presented in the DEIS. We have also identified tracts which we feel should be identified under a standard leasing stipulation for areas affected by shallow gas zones (see comment I to follow).

As this analysis was made solely from the information presented by BLM on the DEIS maps Geologic Hazards and Shallow Oil and Gas, it is only as accurate as the information presented in the DEIS, both as to location and severity of hazard present. The tract-by-tract listing of the geologic hazards shown in those maps to be present in the various tracts of Lease Sale 68 may be summarized as follows: 69 tracts, including seven where the data is uncertain, should be identified under the Mass Movement Tracts stipulation; 62 tracts, including 14 where the data is uncertain, should be identified under the Active Fault Tracts stipulation. Another 104 tracts are affected by the shallow faulting and should have additional evaluations to determine the recency of movement of the faults; 78 tracts, including 10 where the data is uncertain, should be identified under the proposed shallow oil and gas stipulation. The data in the DEIS is not of sufficient detail to identify those tracts that should be listed under the Submarine Canyons or Channels Tracts stipulation (see the attachment).

We recommend these tracts with geologic hazards either be deleted or be considered for leasing only with stipulations which mitigate potential geologic hazards, unless the DOI presents new information which supersedes the information in the DEIS and justifies inclusion of these tracts.

D. OIL SPILL PROBABILITY ANALYSIS

The oil spill probability analysis in the DEIS does not include the impact of pipeline or platform failure due to geologic hazards, nor does it consider the effects of mitigative measure to reduce pipeline and platform failures. The oil spill probability analysis appears to be based on data from experience in the Gulf of Mexico, where geologic, seismological, and oil operation conditions differ significantly from those of the Lease Sale 68 region.

We recommend that the results of a complete geologic hazards analyses be employed in determining the probability of oil spills related to petroleum production from specific areas. The use of historical oil spill figures from other areas to establish the probability of discharge of petroleum into the marine environment in the new area is unacceptable without logical and thorough explanation. The justification for using imported figures must be documented in the DEIS, and must be shown to be consistent with all that is known about the geologic hazards of the area. The use of realistic oil-spill probability figures is critical to the meaningful assessment of impacts of oil development on other environmental issues throughout the balance of the DEIS.

In addition, as recommended in our comment on OCS Lease Sale 53, we urge the DOI to use a seismic and fault hazard analysis in estimating oil spill probability. Our recommended method of evaluation analysis is based on, for each referenced fault, the maximum credible earthquake (MCE) range, approximate distance range of the fault trace to tracts within the basin, bedrock acceleration potential in the tracts capable of being generated by the MCE, and surface rupture/displacement potential attributable to the MCE event.

The DOI should perform a detailed fault hazards study for the lease sale area including accurate locations of all active faults, and a determination of the maximum credible earthquakes and ground acceleration for each tract locality. The methodology previously described is suggested to DOI for use in interpreting the significance of fault hazards for establishment of suitable proposed pipeline routes and platform sites required in development of the Lease Sale 68 area. This process permits constructive commentary by the knowledgeable public.

The seismic information from the completed analysis should be part of the stipulations required before permitting the development of tracts not deleted. These should be set forth in the FEIS.

E. SEISMIC HAZARDS EVALUATION

In Sections I.B.7.h. and IV.B.1. of the DEIS, a general discussion is presented on seismic design criteria and the potential effects of seismic events on the proposed oil and gas exploration and development activities. However, there is no indication that DOI has undertaken a detailed seismic hazards evaluation to establish baseline design criteria for the various blocks of proposed tracts within the sale area. We believe this is a critical, useful pre-sale evaluation necessary for reviewing agencies, as well as companies bidding on various tracts, to have, in advance of a sale. This facilitates clear understanding of development constraints involved in each area, and is necessary so industry will be aware of the costs of mitigating potential adverse impacts of oil and gas exploration and development. Similarly, it is also important for federal, state and local governments to clearly know the true possibilities for development of each tract.

As we raised in our comments on the DEIS for Lease Sale 53, DOI should prepare an evaluation for each of the blocks of lease tracts within the proposed sale area, of the seismic hazards potential due to bedrock acceleration and surface rupture potential attributable to known faults in the vicinity of proposed tracts which are capable of having a significant effect upon tracts within the sale area. This evaluation is vital for the specific tracts that have the potential for sediment instability (seafloor landsliding, slumping, sediment

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creep). This evaluation also requires assessment of the types and properties of seafloor sediments in order to evaluate the potential for seismically induced liquefaction and other surficial failure such as sediment creep and slumping.

Because of geologic hazards, such as slope stability and seismic hazards as presented in the DEIS and Geologic Hazards map for OCS 68, we urge that seismic analyses be incorporated as part of the analysis of sediment instability in all tracts. As in our comments on the DEIS for Lease Sale 53, we recommend a methodology which can be used to obtain the seismic factors we are recommending be analyzed. This methodology should include a discussion of the effect of earthquakes, such as submarine landslides, slumps and liquefaction, as well as the magnitude and frequency of recurrence of earthquakes to be used for design considerations. The stability analysis must include soil factors which are part of the engineering computations.

F. FUTURE GEOLOGIC INFORMATION

The DEIS does not explain how, in the ongoing phases of the project, including oil-development and recovery stages, future geologic hazards information and analysis will be used in determining tract development conditions: Pipeline routes free of topographic irregularities, active faulting, and areas of sediment instability; calculations of oil spill probability and environmental consequences; or in drill-site location decisions, etc.

The growing number of research projects in the Outer Continental Shelf region will steadily add to the state of knowledge of geologic and seismic hazard conditions in future years. The increased OCS research in anticipation of Lease Sale 68 in areas not evaluated for previous sales is but one example. Future decisions concerning all aspects of Lease Sale 68 should be made with full awareness and use of the new information. Lease stipulations should provide for integration of information as it is obtained, whether at the exploration or development stages. In addition, mitigation measures should respond to information as it becomes available.

G. COOPERATIVE REVIEW OF GEOLOGIC HAZARD AND RESOURCE INFORMATION

Direct state participation in the review and analysis of proprietary geophysical, geological, and engineering data and sharing of proprietary data is requested. As indicated throughout this analysis and in our comments on prior lease sales, many doubts exist concerning the present analytical procedures conducted by DOI. State participation in review and analysis result in a more acceptable estimate of the existence, quantity, and value of the resource and would also allow the State to develop a proper assessment of the risks from such occurrences as oil spills and earthquakes.

CDC recommends that the Bureau of Land Management and the U. S. Geological Survey meet and work with state officials involved with oil and gas resource analysis to develop mutually acceptable resource estimates of proposed OCS lease areas, or to allow state officials to review, along with the supporting data, resource estimates that are now unilaterally completed by the USGS. The sharing of information should begin prior to tentative tract selection.

H. ENFORCEMENT OF REGULATIONS OF OCS ACTIVITIES

In the widely spaced tracts of Lease Sale 68 and 53, the CDC is concerned that sufficient staff and resources can be made available for inspections of platforms, pipelines, and all oil loading or unloading facilities. If the five-year lease schedule is accelerated, it would present even more of a burden.

The FEIS needs to describe and analyze in the DOI regulatory and inspection programs. The FEIS should discuss how the proposed lease sale will affect the DOI's inspection program and if the program is adequate.

Subsequent to this analysis, if there is any question as to the adequacy of this program, consideration should be given to a cooperative regulatory program between the State and the USGS to ensure that OCS operations are carried out in a safe and acceptable manner.

18.75 I. SHALLOW OIL AND GAS STIPULATION

The EIS for Lease Sale 53 included a standard leasing stipulation for tracts affected by shallow gas/geopressure zones. In the DEIS for Sale 68, this stipulation was not included in Section I.8.6., Standard Lease Stipulations, for Lease Sale 68 tracts which may be affected by this potentially adverse condition.

The DEIS map labeled Shallow Oil and Gas shows the general location of shallow gas zones and oil and gas seeps which impact proposed lease tracts. The text states that these areas could pose potential hazards to well drilling activities.

Huey Johnson
Gary Midkiff

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We recommend that the standard leasing stipulation for tracts affected by this potentially hazardous condition be included in the FEIS assessment and leasing requirements for Lease Sale 68 tracts.

If you have questions or concerns regarding our comments, please contact Patrick Nevis, Environmental Program Coordinator, at (916) 322-5873.

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July 30, 1981

REFERENCES

California Department of Conservation commentary on Draft Environmental Impact Statement, "Proposed Outer Continental Shelf Lease Sale No. 53 Offshore Central and Northern California"; Bureau of Land Management, U. S. Department of Interior. July 2, 1980.

Draft Environmental Impact Statement, Proposed 1981 Outer Continental Shelf Oil and Gas Lease Sale Offshore Central and Northern California, OCS Sale No. 53, U.S. Department of the Interior, Bureau of Land Management.

Final Environmental Impact Statement, Proposed 1981 Outer Continental Shelf Oil and Gas Lease Sale Offshore Central and Northern California, OCS Sale No. 53, U. S. Department of the Interior, Bureau of Land Management.

Final Environmental Impact Statement, Proposed 1979 Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California, OCS Sale No. 48, U. S. Department of the Interior, Bureau of Land Management. Visuals No. 1, 9 and 10.

Attachment

Lease Sale 68 tracts on which geologically hazardous conditions are shown to be present, as per BLM visuals accompanying the DEIS for lease sale 68 (Geologic Hazards and Shallow Oil and Gas, both 1:760,000 scale).

Tracts within the sale area have been separated into three areas:

Santa Barbara Channel Tracts - tracts located north of the northern Channel Islands

Inner Basins and Banks Tracts - tracts located south of Anacapa Island and east of the Santa Cruz-Catalina Ridge and Catalina Basin

Outer Basins and Banks - tracts located south of the northern Channel Islands and west of Santa Cruz-Catalina Ridge and Catalina Basin.

Tracts which should be specified to be leased with stipulations under the Submarine Canyons or Channels Tracts stipulation, cannot be identified from the DEIS data due to lack of detail in the bathymetric contours on the visuals.

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow* Faulting (Dating Needed)	Shallow Oil and Gas**	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
1				X		
2						X
4						X
5				X		
6				X		
7	X			X		X
8	X			X		X
9	X			X	X	X
11	X			X		
12	X					X
13	X			X	X	
14				X		
15	X					X
16	X					X
17						X
18	X					X
19	X					X
20				X		
21				X		
22				X		X

* Recommend including in lease-with-stipulation unless the fault is shown to be inactive.

** Tracts for which CDC recommends that a standard shallow oil and/or gas zone stipulation be added to the DEIS.

Santa Barbara Channel Tracts (Continued)

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow* Faulting (Dating Needed)	Shallow Oil and Gas**	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
23						X
25	X					X
26	X					X
27	X			X		X
28	X			X		X
29	X			X		X
30	X			X		X
31				X		
32				X		X
33				X		X
34	X			X		X
35	X		X	X		X
36	X					X
37	X					X
38	X					X
39	X			X		X
40				X		
41				X		X
42			X	X		
43			X	X		
44			X	X		
45			X	X	X	
46				X	X	
47	X					X
48				X		
49				X		

43(c)

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow* Faulting (Dating Needed)	Shallow Oil and Gas**	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
50			X	X		
51			X			
52	X					X
53	X					X
54				X		
55				X		
60	X		X	X		
61	X					
62	X					
63	X			X		X
64				X		
65				X		
66				X		
67				X		
68				X		
70				X		
71				X		
72				X		
73			X			
74			X			X
78				X		
79			X	X		
80			X			
81			X	X		
82				X		X

43(d)

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow Faulting (Dating Needed)	Shallow Oil and Gas	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
83				X		X
84				X		X
85			X	X		
86			X			
87	X			X		
88				X		
89				X		
90				X		
92				X		
93			X	X		
94			X	X		
95			X			
96		X	X			
98		X	X			
99				X		
100				X		
101	X	X		X		
102	X	X		X		
103	X	X		X		
104				X		
105	X			X		
106	X	X		X		
107	X	X		X		
			43(e)			

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow Faulting (Dating Needed)	Shallow Oil and Gas	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
108			X			
109				X		
110				X		
111			X			
112				X		
113				X		
115			X			
116			X			
117				X		
118				X		
119				X		
120				X		
121				X		
123			X			
125				X		
126				X		
127				X		
133				X		
134				X		
136				X		
137				X		
138				X		
142				X		
146				X		
147	?			X		
152				X		
			43(f)			

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow Faulting (Dating Needed)	Shallow Oil and Gas**	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
159	X				X	
160	X				X	
161				X	?	
162	X				?	
163	?			?		
164				X		
165			X	X	X	
167				X		
169			X	X		
170	X			?	X	X
171	X			X	X	X
172	X		?	X		X
173			X	X		
174	X		X		X	
175	X				X	X
176			?	X	?	
177				X	X	
178					?	
179				?		
180				X		?
181			?	X	X	X
182	X		X	X	?	X
183	?			X	?	
184				X	X	
185				X		
187					X	?
188	X		43(6)	X	X	X

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow Faulting (Dating Needed)	Shallow Oil and Gas**	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
56	X		X	X	?	
57			X		X	
58					X	
59	X		?	X	X	
130					X	
131				X		
132	?			X		
139					X	
140	X			X	X	
141	X			?		
148				X		
149			X	X	X	
150	X		X	X	X	
153			?	X		
154			X	X	X	
155	X		X	X		
156			?	?		
157			?	?	?	
158	X		X	X		
189				X		
190				X		
191				X		
192				X		
193			X	X		
194				X		

43(h)

Tract #	Mass Movement Tracts		Active Faulting (Known Holocene)	Shallow Faulting (Dating Needed)	Shallow Oil and Gas	
	Slumps/ Slides	Sediment Creep			Oil and Gas Seep	Shallow Gas Zone
195				?		
196	X		X		X	
197	?		?		X	
198			X	X		
199	X		X	X	X	?
200	X		?	X	?	
201			X	X	X	
202	X	?	?	X	?	
203	X		X	X		
204			?	?		
205	X	?	?	X		
206		?	X	X		X
207		?		?		
208	X	?	X	X		
209			X	X		X
210			?	X		
211			X			
217			X			
220			?	?		
			43(1)			

State of California

The Resources Agency

Memorandum

To : Huey D. Johnson
Secretary for Resources
1416 Ninth St.
Sacramento, California 95814

Date: July 8, 1981

Attn: Jim Burns

From : Department of Fish and Game

Subject: SCH 81060510T - 1982 O.C.S. Lease Sale No. 68 (Oil and Gas Lease Sale - Southern California)

We have reviewed subject document which deals with the possible lease of 218 tracts involving over 1.1 million acres of OCS lands offshore of the Southern California Bight. This document represents, to a significant degree, a synthesis of the final EIS for OCS Lease Sale No. 48 with only minor revisions and updating. Accordingly, many of our comments for that earlier sale, detailed in a letter to the Bureau of Land Management (BLM) on October 11, 1978, copy attached, remain relevant to the proposed sale.

Additional comments and concerns and recommendations are offered as follows:

Water Quality

In several cases possible deleterious effects of oil development are dismissed as inconsequential while at the same time proclaiming the knowledge necessary to reach such a conclusion is unavailable. For example, on pages 4-47, paragraph 2, it essentially says that any water quality degradation due to drilling muds will be insignificant, limited to the areas near a given platform or exploratory rig and manifested solely by increases in turbidity and chemical oxidation demand. However, on pages 4-67 it is stated; "Several types of discharges and effluents could be released during OCS oil and gas activities. Of particular concern are drilling muds because very little is known about their long-term, chronic impacts....."

We also believe insufficient evidence has been provided to demonstrate the acute toxicity drilling fluids may have on sensitive California marine species. In a review of the available literature, we have found considerable controversy regarding the acute toxicity of drilling fluids, possibly because of both the variation in the fluids being discharged and the variety of test organisms and testing techniques used. Also, where toxicity has been encountered in such tests the toxic substance was not isolated.

We agree with the ELM analysis that information regarding the chronic toxicity of these discharges is unavailable and we further find this an area of great concern. Determination of sublethal effects, such as reduction in fertility and bioaccumulation of trace metals in marine populations, is important baseline work which has yet to be accomplished.

18.79

Elevated levels of barium, chromium, copper, lead, and mercury have been found in sediments around drilling platforms. No comprehensive studies exist on the long-term fate and effect of metals from drilling fluids. Because of the large volume of such material (in excess of 1,300,000 barrels) proposed for discharge off the California coast during the life of the oil fields, the amounts of these elements deposited in the ocean will be considerable and should not be ignored.

The accumulative effects of discharging over 1.3 million barrels of drilling muds for sales 35, 48, and 68, plus those that may be generated by future oil sales, should be analyzed for gaps in knowledge and appropriate studies proposed to gain an understanding of the consequences of these effects.

Relative Quantity of Effluents

On page 4-36 there is an argument offered which attempts to suggest that the pollution potential that might accrue from activities associated with OCS Sale No. 68 is small by comparison with the contribution of effluents from municipal and industrial sources on the mainland. The precise point of discussion is not completely clear, but seems to hint at the idea that the volume of pollutants entering this bight now is so large that a little more won't be noticed. Without addressing the premise of that point, we would argue that the relative pollution contribution is not comparable without knowing the ecological losses associated with the increased burden of oil drilling in addition to the mainland effects. Further, the continuous discharge of oil and grease from sewage outfalls in the Southern California Bight cannot be compared to the possible catastrophic event of oil pollution in a biologically sensitive area which would feel the results of even small amounts of oil.

Oil Spill Modeling

The EIS was accurate in noting the unusual and valuable natural resources (intertidal, subtidal, pelagic, benthos, pinnipeds, sea birds, recreational, cultural, and commercial) that depend on clean and unpolluted waters to thrive in the Southern California Bight.

Accordingly, there is good reason to be cautious and thorough in planning for large scale offshore oil production. In that regard, we suggest that such planning include the probabilities of an oil strike on each ecologically sensitive area once a spill occurs and not the combined probabilities of the oil spill occurring and a strike on an ecologically sensitive area. There should be preparation for the consequences of such a spill with respect to proper response plans, equipment and personnel trained to implement the plans.

Project Alternatives

Of the five alternative action scenarios offered for this sale, the Department recommends in part, and as an interim approach, BLM's


Alternative 2. This alternative calls for a six mile buffer zone around the Northern Channel Islands. We suggest interim because ideally the buffer zone around the islands, particularly the westerly end, should be based on an ocean circulation model employing the best available technology and considering each ecologically sensitive area in combination with oil spill probability data and response capabilities. Such a zone may, in fact exceed, for specific areas, the six miles now being called for at large. Unfortunately, the information upon which such a recommendation should be based will not be available until completion of a detailed Santa Barbara Channel Circulation Investigation which is scheduled to commence this year (page 4-49). We believe an option for expanding this buffer zone should be maintained until that investigation and a subsequent analysis are completed.

In addition to the Channel Island buffer zone, we also recommend deletion of 19 additional tracts as follows:

54N-82W	41N-50W
52N-82W	39N-69W through 71W
51N-62W	38N-70W through 71W
50N-61W	37N-69W through 71W
49N-59W through 61W	36N-69W through 71W

The above tracts have been designated as "Category A: Extreme Impact Potential" with regard to marine mammals and seabirds of the Southern California Bight. These areas along with those tracts located within six nautical miles of San Miguel, Santa Rosa, Santa Cruz, Anacapa and Santa Barbara, would significantly reduce the potential for impact of oil and gas exploration and development upon significant population concentrations of marine mammals and seabirds and areas containing valuable as well as delicate natural resources. In addition, State waters around these Islands have been designated as Areas of Special Biological Significance (ASBS) by the State Water Resources Control Board.

Should there be any questions regarding our comments and recommendations, please contact R. E. Mall, Environmental Services Supervisor, at ATSS 635-5155.


Director

Attachment

State of California

Memorandum

U.S. Department of Interior
Bureau of Land Management
Pacific Outer Continental Shelf Office
300 North Los Angeles Street
Los Angeles, CA 90012

Date: October 11, 1978

From: Department of Fish and Game

Subject: Draft EIS Outer Continental Shelf (OCS) Sale #48

The subject document adequately discussed the existing biological resources and identifies, for the most part, impacts which would result from the proposed lease sale. However, it does not provide sufficient compensation to offset potential impacts to living marine resources or resources dependent upon their survival.

With respect to discharges of waste from offshore developments, we offer the following comments on those wastes having the potential for long-term impacts.

It is recognized that the Environmental Protection Agency (EPA) is responsible for regulation of ocean discharges. However, the Department expects to comment on specific waste discharge requirements prescribed by EPA as they pertain to development and production of OCS oil leases. Of specific concern are the discharges of drill cuttings and mud, sanitary and domestic waste and formation waters.

As stated in the subject document, oil spills will occur and will present a most significant impact to living marine resources.

With regard to impacts resulting from oil spills to all living marine resources and mitigation measures, we are unable at this time to provide detailed comments for each component. However, the following specific comments regarding marine birds and mammals are generally applicable to the total marine ecosystem:

A brief examination of the document has revealed that although it contains a thorough synthesis of the investigative findings (particularly those detailed in Volume 2, Draft Final Report, 1975-1976, Marine Mammals and Seabirds Survey), it identifies the sensitive species and sensitive habitat and describes potential adverse impacts; it fails to communicate certain key points made by earlier ELM funded OCS investigators. For example, those areas designated as "Category A" (in Volume 2, Marine and Seabird Survey) and defined as having "extreme impact potential" are not fully presented in the EIS. The investigators expressed the views that these areas are of greatest importance to animals because one or more of the following conditions are met:

1. Year-round heavy use.
2. Predictable seasonable concentration of major populations.
3. Location of bird nesting areas or pinniped rookeries.
4. Presence of essential valuable species.

47

Oil and/or disturbance in these areas constitute an extreme threat to animal populations. The probability of catastrophic impacts--that measure of impact effecting entire populations and from which recovery is uncertain--is great because many animals are concentrated in one place and/or young may be present.

The EIS fails to present the investigator's recommendation:

"The conclusion is inescapable that accelerated development of offshore oil resources is likely to be disadvantageous to natural populations of marine mammals and birds. Simply put, new development necessitates an increased level of human activity in the midst of shy and secretive species that only reluctantly coexist with man".

Assuming that increased offshore oil resource development is inevitable, prudence demands that the well-being of neighboring animal populations be considered at all times. Location of facilities must be chosen so that:

1. Noise and conspicuous human activity does not disturb animals at places where they concentrate, and
2. Downstream drift of concentrated oil does not imperil these same populations.

To minimize detrimental impacts to animal populations we recommend:

1. That development be prohibited in OCS areas of greatest biological significance (Category A, Figure II-55). Development in other OCS areas of biological importance (Category B and C) should proceed only with extreme caution and also appropriate safeguards.
2. Should an oil spill occur, the immediate response should be containment:
 - a. Restrict the free flow of oil, and
 - b. Restrict the spread of floating oil.
3. Clean-up and impact assessment activities should proceed in the following sequence:
 - a. From the baseline (this document or Volume III - Principal Investigator Report), determine the size, location, and vulnerability of animal populations in the area or in the path of the drifting oil
 - b. Give nesting, roosting, hauling, or pupping areas wide berth--disturbance due to visitation or aerial reconnaissance will compound the effects of oil contamination.
 - c. Retrieve floating oil and initiate clean-up on mainland beaches not subject to the extreme impact of disturbance.
 - d. Conduct impact assessment studies via (1) cautious on-foot survey of sensitive area (bird and pinniped colonies) and (2) standard ship and aerial surveys, using methods and timing of the baseline studies.

19.85

18.86

48

7-167

We concur with these recommendations and provide others below:

The EIS fails to emphasize the unique nature and importance of those areas that are most valuable. The most sensitive areas from the standpoint of marine birds and mammals in the whole of the Southern California Bight (SCB) exists on the north side of the Northern Channel Islands (particularly, San Miguel Island) and on the north side of Santa Barbara Island. Chronic oil pollution and occasional large spills in these areas could destroy whole breeding populations. Some of these breeding populations are unique in many respects; with some representing the bulk of the world breeding populations and other representing the only United States breeding populations. The waters to the north of San Miguel and Santa Barbara Islands are known to be especially productive for bird and mammals.

It should be emphasized that the marine bird and mammal colonies are currently experiencing (and have experienced) considerable environmental stresses in the form of pesticides pollution, introduction of feral animals, impacts on food resources, and disturbances by human at the colonies.

Mitigation measures considered in the EIS will at best attempt to minimize initiated impacts. Admittedly, "an irreversible or irretrievable commitment of fish and wildlife resources and their habitat could occur", and most certainly will occur, "in the area of a massive oil spill, or if areas are frequently subjected to chronic low levels of oil pollution (in addition to present natural oil seepage)".

Given the serious long-term potential devastating effects of the proposed leases, the proposed compensation measures are completely inadequate to compensate for the anticipated impacts on the marine resources.

One compensation measure not considered is mainland habitat acquisition and protection. This could partially offset some of the expected losses. We recommend that strong consideration be given to this compensation alternative.

The EIS states that "chronic oil pollution and spills will occur and the effects of this pollution on birds and mammals, as well as other marine resources, is unclear". The EIS fails to outline a monitoring program that will adequately evaluate the inevitable adverse effects that are expected to accompany oil resource development. As a minimum effect, the following monitoring program should be initiated in the next few months:

The March, 1978 BLM-OCS baseline study on birds and mammals should be updated as follows:

1. A few selected bird and mammal colonies and indicator species should be monitored annually to evaluate changes in the effects of oil pollution.
2. Channel Island and mainland beaches should be surveyed twice a month to evaluate changes in mortality of sea birds as a result of increased oil pollution. No data is presently available for the vulnerable north shore of San Miguel Island. It is essential to obtain such data as quickly as possible in order to interpret information collected in the future.

3. Offshore and aerial survey standard series transects should be conducted quarterly in order to update the baseline study and obtain current information to evaluate the significance of beach-cast mortality data.
4. The methodology and monitoring scheme employed during the baseline study should be maintained to obtain comparable, meaningful data. In addition, the extreme sensitivity of the bird and mammal colonies in question should be emphasized so that cleanup operations do not cause as much or more damage than an oil spill.

Having completed our review, the Department concurs specifically with the following statement presented in summary by BLM: "The BLM has a unique responsibility and opportunity to design regulations and procedures that can protect and promote the continued well-being of these valuable natural resources that will, under proper stewardship, be with us long after the last barrel of oil has been extracted from Southern California Bight". We believe our comments will help BLM to achieve their responsibility.

We appreciate this review opportunity. If you have any questions, please contact Mr. Rolf Mall, Environmental Services Supervisor at 350 Golden Shore, Long Beach, CA, 90802, (213) 590-5140.

COPY ORIGINAL SIGNED BY
J. E. MCCORMICK
FOR
Director

Memorandum

Date : JUL 3 - 1981

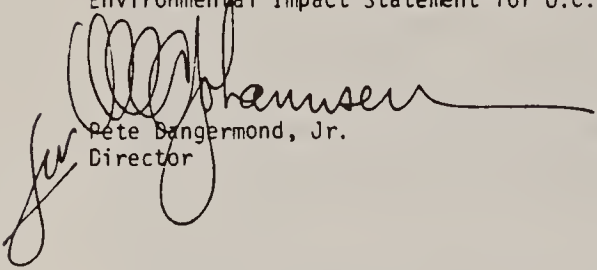
To : James W. Burns
Project Coordinator
Resources Agency

From : Department of Parks and Recreation

Subject: Draft Environmental Impact Statement
O.C.S. Sale 68 (Oil and Gas Lease Sale,
Southern California)
U. S. Department of the Interior - B.L.M.
SCH 81060510.James W. Burns
Project Coordinator
Resources Agency
Page 2

activities, we expect that everything possible will be done to keep the material from spreading and reaching the nearshore marine environment and beaches. In the event a spill does occur, we would expect to be fully compensated for all work associated with its clean-up and removal, restoration of the affected areas and biota, and monitoring of the effects of the spill.

Thank you for the opportunity to participate in the review of the Draft Environmental Impact Statement for O.C.S. 68.


Pete Dangermond, Jr.
Director

On April 23, 1979, a letter from then Director Russell W. Cahill, transmitting Resolution 67-78 (11-17-78) of the State Park and Recreation Commission was sent to the Pacific Outer Continental Shelf office, with a request that both documents be included as part of the permanent file on O.C.S. oil and gas leasing activities off the California coast. We would like these documents in the response file for O.C.S. 68.

18.87

In addition to the statements referred to above, we have several other points of concern. The outstanding character of the marine biota in the Channel Islands Marine Sanctuary has been recognized and deserves adequate protection. This was the main reason for establishment of the Sanctuary. Therefore, all 37 tracts that are partially or entirely within the Channel Islands Marine Sanctuary should be deleted from this and all future proposed sales.

18.88

The Department of Parks and Recreation will oppose any project that is proposed to pass through a State Park System unit, if the project is not in keeping with the goals and management programs for which that unit was established and is operated. If a project is allowed to pass through State Park System property, then full mitigation of the project and use fees will be expected and considered appropriate.

18.89

In any area where exploratory or production drilling is contemplated, surveys for archeological and historical artifacts should precede any work. The surveys should include side scan sonar, magnetometer, and sub-bottom profiles. The area included in the survey should be 15 times the depth of the water over the proposed drilling site.

18.90

This Department is concerned about the impacts an oil spill would have on the marine resources, recreational beaches and facilities, and manpower commitments of this Department. If any oil escapes from this, previous, or future leasing

18.91

STATE PARK SYSTEM UNITS THAT MAY BE IMPACTED
BY AN OIL SPILL FROM TRACTS WITHIN OCS 68

STATE BEACHES

Refugio
El Capitan
Carpinteria
Emma Wood
San Buenaventura
McGrath
Leo Carrillo
Bolsa Chica
Huntington
Doheney
San Clemente
San Onofre
Carlsbad
South Carlsbad
Leucadia
Moonlight
San Elijo
Cardiff

Torrey Pines
Silverstrand
Corona Del Mar*
El Matador*
El Pescador*
La Piedra*
Las Tunas*
Malibu Lagoon
Manhattan*
Point Dume*
Point Sal
Redondo*
Robert H. Meyer*
Royal Palms*
Santa Monica*
Topanga*
Will Rogers*
Alamitos*

STATE PARKS

Gaviota
Crystal Cove

Point Mugu
Borderfield

NATURAL PRESERVES

Penasquitos Marsh (Torrey Pines)

Santa Clara Estuary (McCrath)

* Units owned by the State Park System, but operated by other agencies.

State of California

State Lands Commission

Memorandum

To : Ms. Deni Greene, Director
Governor's Office of Planning
and Research

Date : July 27, 1981

File No.:

From : **EXECUTIVE OFFICE**
1807 13th Street, Sacramento 95814

Subject: Draft EIS - OCS Lease Sale 68

18.92

Our review of the subject document leads us to make these preliminary comments as to the adequacy of its analyses and discussions of the proposed action.

GENERAL

1) While the document provides a development timetable and projection as to the number of facilities which might be expected under low, mean and high resource estimates (pages 1-9, 1-10), it is void of any analyses of such development as to probable locations within the lease sale area. General area locations of development could be postulated from Interior's resource knowledge and subsequent analyses could provide worst case environmental impacts for various environmental conditions, i.e. air quality and oil spill trajectories, vessel traffic analysis, etc. It is patently clear that impacts will not be "averaged" over the lease area as is portrayed in the existing analysis.

18.93

2) A particular concern is the discussion of oil spills. The present discussion dwells on the probability of oil spills and the effects on marine species, subjects which appear fully discussed in the existing literature. The Bureau of Land Management should emphasize where oil would move and the capabilities of existing clean-up facilities to adequately clean up oil under various weather scenarios which reflect worst case conditions. Emphasis should equally be placed on the effect of oil spilled on critical environment areas and the industry's ability to protect these areas.

18.94

July 27, 1981

- 3) It was particularly disturbing, as a member of the Pacific States Regional Technical Working Group, that the DEIS does not seriously address "official" recommendations made by the Group in September 1980 (see page 1-17). Specifically, recommendations 1, 2 and 4 are ignored; recommendation 3 resulted in a report released to a selected audience in May 1981 and it is not clear that it has ever been made available to the general public or the local governments impacted; discussions pursuant to recommendation 5, when such exist, vary in relative depth and usefulness through the document. 18.95
- 4) Various federal programs, policies and regulations are specified, offered, etc., as "mitigations" for known or postulated adverse environmental impacts, e.g. OCS Orders 1-12 which are specified and enforced by the U.S.G.S. Yet the mere existence of such does not necessarily guarantee their effectiveness. The DEIS should contain an analysis of the effectiveness of such mitigation. For example, will the proposed lease sale result in more development or activities than the U.S.G.S. can effectively police, particularly with regard to Orders 2, 6, 7, 8 and 9? Similar questions need be addressed as to any mitigation required. 18.96

SPECIFIC

1) Page 1-2:

Leasing of tracts within the marine sanctuary could lead to grave environmental consequences. Additionally, the action could lead to drainage of state resources. Although the law establishing the state oil and gas sanctuary provides for leasing in the event of drainage by federal activities, this possibility could be foreclosed if the marine sanctuary oil and gas drilling regulations, as originally proposed, go into effect. 18.97

2) Page 1-6:

Paragraph 4 under c. is an example of the unrealistic assumptions made throughout the document. Exxon has recently announced their intentions to expand their development of the Santa Ynez Unit. The "preferred" alternative calls for the expansion of the O. S. and T. and shipment of processed oil via tanker from that facility. Unless specific requirements are imposed by the federal government to guarantee the validity of this "assumption", the discussion of the DEIS is much too narrow as to environmental impacts of probable developments. 18.98

July 27, 1981

3) Page 1-50:

The EIS is correct in stating that the National Park boundaries include the submerged lands within one nautical mile of the Channel Islands. However, these lands are sovereign lands of the State of California and are under lease to the Department of Fish and Game for an ecological reserve. This lease arrangement is the source of the Department of Fish and Game's control over fishing and subtidal biological resources. 18.99

4) Page 2-4:

Competition for berths is already intense on the California coast. As such, it is difficult to understand the DEIS claim that there will be no displacement of commercial fishing craft. 18.100

5) Page 4-16:

The DEIS states that spill containment is possible in eight to ten foot seas and with winds of 20 knots. This is a bit optimistic. 18.101

6) Page 4-85:

This section states the various terrestrial birds would not be affected by an oil spill. This material directly contradicts the letter of the Fish and Wildlife Service, contained in Appendix E. This letter, at page 13, states that the peregrine falcon, and other raptors, could suffer lethal effects from contaminated prey. 18.102

7) Page 4-85:

The DEIS doesn't address the range expansion of the sea otter into areas that might be subject to oil spills. 18.103

8) Page 4-92:

In considering the impacts of an oil spill, the DEIS seems to denigrate the future impacts on estuaries, as the DEIS infers they may be developed. However, as there are a number of enhancement and restoration projects underway, it seems reasonable that the DEIS should address the potentially harmful impacts of oil spills in these restored areas. Furthermore, the impacts listed in the DEIS are broad and do not adequately describe the extent and intensity of the potential impacts. 18.104


Ms. Deni Greene

- 4 -

July 27, 1981

If you have any questions regarding these comments, please contact Dwight E. Sanders at 2-7827.

APPENDIX B¹


WILLIAM F. NORTHROP
Executive Officer

cc: Huey Johnson
Secretary for Resources

STATE OF CALIFORNIA'S COMMENTS
REGARDING THE NATIONAL
OCEANIC ATMOSPHERIC ADMINISTRATION'S
SUSPENSION OF THE HYDROCARBON REGULATIONS
WITHIN THE CHANNEL ISLANDS AND
POINT REYES FARALLON ISLANDS
NATIONAL MARINE SANCTUARIES

¹Editor's Note: Due to space limitations, this appendix is not included in the FEIS. It is available for review at the Pacific OCS Office of BLM upon request. BLM has reviewed the information provided and incorporated it into the EIS as appropriate. We understand NOAA's problem related to the sale and will assist in their analysis as needed.

July 31, 1981

We have attempted to answer all of the State's concerns in the EIS or in the following responses. However, the State raises similar questions several times in different sections. Therefore, the reader should refer to all responses on a particular issue.

18.1 The State's concerns have been noted.

The EIS has been revised to include Alternatives for the Adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone), tracts adjacent to Santa Monica Bay and a tract outside of the ports of Long Beach/Los Angeles. The Channel Islands National Marine Sanctuary Alternative was included within the DEIS. The Secretary of Interior will make the final decision regarding which tracts will be offered for lease.

18.2 BLM recognizes that transporting oil to shore by barge is more risky than employing pipelines. However, as it does not seem feasible to pipe oil to shore from the Outer Banks, our analysis incorporates the higher risk of barging. This analysis shows that, for Proposed OCS Lease Sale No. 68, the impact of barging from the Outer Banks is not significantly different than that also created with piping the oil to shore. Whenever possible, we have included the points listed into our analysis. It is not possible to incorporate all of the factors listed as the details of the transportation methods eventually employed are unknown.

18.3 The EIS includes Military Uses (Section II.C.8) and Proposed Military Stipulations Nos. 1 and 2 (Section I.B.6.d and e). Comments from the Department of Defense were received late and are being reviewed.

18.4 The State's comments were noted and improvements made where possible. For example, the sections (Sections III.C.4, III.D.3.d, and IV.C.14) of the EIS which specifically address land use have been revised. Information presented in the demography and public services sections of the statement have been included in the land use section and related to additional information reflecting possible strains on the already tight housing market in specific areas.

A number of comments on the OCS air quality regulations were received from the State of California and its agencies. Following is a summary of the regulatory framework used for air quality purposes. The Department of the Interior (DOI) is the agency responsible for the regulation of OCS air quality. This authority is provided by Section 5(a)(8) of the Outer Continental Shelf Lands Act Amendments of 1978, which requires DOI to provide regulations "for compliance with the national ambient air quality standards pursuant to the Clean Air Act (42 USC 7401 et seq.), to the extent that activities authorized under this Act significantly affect the air quality of any State". DOI published its final national regulations

(45 FR 15128) and proposed regulations for offshore California (45 FR 15147) on March 7, 1980.

In spite of this mandate, the exclusivity of DOI's regulatory authority has been clouded by two occurrences. On April 18, 1978, EPA published a notice in the Federal Register (43 FR 16393), in which it concluded that portions of California's State Implementation Plan (SIP) for the maintenance of certain air quality standards should be applied to a platform located in federal OCS waters. EPA further stated that in the absence of EPA-approved New Source Review (NSR) and Prevention of Significant Deterioration (PSD) provisions in California's SIP, NSR and PSD provisions promulgated by EPA would apply. This action by EPA raised a serious jurisdictional question: did EPA, DOI or both have responsibility for the control of air pollutant emissions arising from OCS activities in federal waters? Resolution of this issue occurred on August 20, 1979 when the U.S. Court of Appeals for the Ninth Circuit ruled that DOI, and not EPA, has the authority to regulate air quality over the OCS.

The second occurrence which challenged DOI's exclusive authority to regulate OCS air emissions occurred in 1978 when the State of California and the Santa Barbara Air Pollution Control District filed a suit against Exxon Corp., Exxon Pipeline Company of California, Chevron U.S.A. Inc., Shell Oil Company, and Secretary of the Interior Cecil Andrus (California v. Exxon Corp. 78-2849 RMT, C.D. Cal. 1978). The action was a complaint for injunctive and declaratory relief and for civil penalties regarding a violation of air quality standards. In essence, California endeavored to require the installation of air pollution control

equipment on a platform sited beyond the three-mile limit (i.e., in federal waters). In his Order (for dismissal) United States District Court judge for the Central District of California stated that "the authority granted to the Secretary of the Interior by the OCS Lands Act with respect to petroleum operations on the Outer Continental Shelf excludes any authority by the State over such operations . . ."

However, both state and local government agencies in California have expressed serious concerns regarding the adequacy of DOI's regulations in protecting the State's air quality from further degradation. Partly as a result of such concerns, the regulations of many coastal Air Pollution Control Districts include provisions which could require, albeit indirectly, the installation of emission control equipment on OCS facilities as far as 70 miles seaward from the coast.

In order to determine the availability and effectiveness of potential OCS air quality mitigation measures, the Air Quality Analysis for Proposed Lease Sale No. 68 (POCS Technical Paper No. 81-7) included a description of potential OCS emission control equipment and strategies.

18.5.b Letter of June 19, 1980. These comments focus specifically on the U.S. Geological Survey's national and proposed California regulations. A detailed description of these regulations and their implications for OCS activities are presented in Chapter III of POCS Technical Paper No. 81-7, and a summary is provided above [response to Comment No. 18.5.a].

Letter of July 3, 1980. These comments discuss a large range of issues including cumulative air impacts. The AQA for Proposed Lease Sale No. 68 considered cumulative air impacts associated with existing and proposed OCS activities (see Table III.4, POCS Technical Paper No. 81-7).

18.5.c The concern about the modeling analysis goes to the heart of "what is a model?". If the type of model used for Proposed Lease Sale No. 68 analyses was based only upon a compilation of measured data taken on land, the concern might be valid. However, the RAPT model used for photochemical simulation is based upon physical principles that do not change whether over land or water. The fundamental principle used is conservation of mass through the windblown transport and chemical reactions.

The input data to the model could vary from land to water. Here, a conservative approach was adopted to estimate reasonable inputs in lieu of actual measurements for offshore areas (some of these measurements are just now being taken in studies by the American Petroleum Institute and by the Bureau of Land Management). Conservatism was introduced in assuming (1) no plume rise, (2) no wind shear, and (3) reduced dispersion over water. The platform emissions may rise significantly but lacking details of the local stability, the "no plume rise" assumption maximizes impacts. Wind shear dilutes emissions, thus reducing impacts while the "no wind shear" assumption used maximizes them. Similarly, with the choice of over-water stability and dispersion, conservatism was introduced by reducing unstable conditions from onshore measurements. These assumptions are consistent with preliminary findings of the new field programs. Finally, initial conditions for the over-water trajectories were chosen from within the range of values actually measured offshore and chosen to simulate onshore high ozone conditions.

The nonreactive modeling performed with PTMTP and CDM was tailored by the over-water inputs for stability. Additional conservatism was introduced by using straight-line trajectories from onshore measurements, thus minimizing travel distance and associated dispersion.

A detailed discussion of specific comments on air pollutant emissions and impacts is presented in the response to Comment Nos. 18.20, 18.20.I, and 18.20.II.

18.6 The EIS is being revised to remove any contradictions which may be present. Although the comment does not specify contradictions within the DEIS, some confusion may result from misinterpreting long-term from short-term effects and near platform from lease sale area wide effects. The EIS has been clarified.

In addition, a general statement has been added to Section IV.C.6. Section IV.A.5 also contains a discussion of drilling muds. We are aware more information is needed on this subject. Studies are being conducted by several groups and are expected to continue in the future.

18.7 The DEIS did reference the NOAA September 1980 study. This study was funded by the Pacific OCS of BLM although the report draft does not acknowledge BLM on the cover. The NAS Safety and Offshore Oil report became

available after the DEIS was written and contains no information regarding oil spill trajectories into Santa Monica Bay.

Impacts to tracts adjacent to Santa Monica Bay are discussed in Alternative 5.

- 18.8 Clean-up equipment may not completely protect all sensitive areas in case of an oil spill. See Alternatives 1-5 for a discussion of possible impacts.

Analysis for Proposed Sale No. 68 oil spill model does have the circulation information that is included in the "A Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region", a report to BLM by NOAA.

- 18.9 Comment noted. The comments suggest the FEIS consider the effects of geologic hazards in increasing the probability of oil spills through facilities failure. The comment presumes that only mechanical failure or human error was previously considered. This presumption is incorrect. See response 18.15.

- 18.10 No deletion alternative concerning tracts in the VTSS has been proposed. DOI will work with U.S. Coast Guard on a case-by-case basis as exploration and development plans are submitted. The Eleventh Coast Guard District has recommended to their headquarters in Washington, D.C. (as a result of their mandated Port Access Route Study in Southern California) that existing vessel routing schemes be retained with a few minor modifications "to better accommodate the competing uses of the offshore waters" (Oral Testimony, Captain Donald M. Taub, Eleventh Coast Guard District at Long Beach, Proposed Sale No. 68 DEIS Hearing, July 31, 1981). Alternative 5 addresses the impacts associated with deletion of Tract 165 in the LA-Long Beach Precautionary Area.

- 18.11 The establishment of the Sanctuary is based on social and cultural values which we feel cannot and should not be given a monetary value.

- 18.12 The EIS has been revised to include the 1979 value of tourism.

- 18.13 These resources are included in the discussions of Alternatives 2 and 3.

18.14

Analysis for Proposed Sale No. 68 oil spill model has the circulation information that is included in the "A Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region", a report to BLM by NOAA.

We are aware of deficiencies in our knowledge of spill trajectories. However, the USGS spill model uses the most current data available and is constantly being updated. In addition, significant resource areas are pointed out in the EIS regardless of their "hit" probability.

18.15

The study cited in the DEIS by Richmond, et al., was considered in the preparation of the EIS geohazard's analysis. In addition, Burdick and Richmond (in prep.) was used to identify tracts proposed for stipulation. These tracts, identified by the U.S. Geological Survey, are listed in Section I.B.6.c.

All or portions of the tracts recommended for stipulation may contain mass transport deposits, steep slopes, or active faulting. Exploratory drilling operations, emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas, and the emplacement of pipelines will not be allowed within the potentially unstable portions of these lease blocks unless or until the lessee has demonstrated to the Deputy Conservation Manager, Offshore Field Operation's (DCM, OFO's) satisfaction that mass transport of sediments or faulting is unlikely, or that exploratory drilling operations, structures (platforms), casing, wellheads, and pipelines can be safely designed to protect the environment in case such mass transport or faulting occurs at the proposed location. This may necessitate that all exploration for and development of oil or gas be performed from locations outside of the area of instability, either within or outside of listed lease block.

If exploratory drilling operations are allowed, site-specific surveys shall be conducted to determine the potential for faulting and mass transport of sediments. If emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas is

allowed, all active faults or mass transport deposits in listed lease block must be mapped. The DCM OFO may also require soil testing before exploration and production operations are allowed.

The State commented that "the EIS fails to incorporate geohazards and seismic potential in oil spill modeling work." Section IV.B.1 states: "Oil and gas operation could be affected by geological phenomena or conditions. The primary ones are: seafloor instability, shallow gas, oil and gas seeps, and seismicity and faulting." Additionally, the Oil Spill Model, used in the Proposed Sale No. 68 Environmental Analysis, was based on all records of spills since 1964. For further information see response 13.10. Also see responses 18.61 and 18.70 for information on previously deleted tracts and response 18.96 concerning enforcement.

18.16 Since 1980, the Geological Survey has been actively negotiating with the California State Lands Commission to obtain an agreement to protect the confidentiality of privileged or proprietary information in accordance with Section 26(e) of the OCS Lands Act, as amended. The Bureau of Land Management will cooperate as necessary to facilitate the information sharing program when the subject agreement has been made.

18.17 A discussion of potential impacts to prey species of marine mammals and seabirds may be found in Section IV.C.5 (Fish and Fisheries) and IV.C.3 (Plankton). The results of Proposed Sale No. 68 should not preclude a sea otter translocation attempt. A discussion of potential impacts to San Nicolas Island has been included.

Analysis for Proposed Sale No. 68 oil spill model does have the circulation information that is included in the "A Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region", a report to BLM by NOAA.

18.18 Any refinery modification would require an acceptable Environmental Impact Report. An Environmental Impact Report must discuss impacts on air quality, water quality, transportation, noise, and the biological and physical environment as a result of proposed refinery modifications. If the oil companies decide to transport Proposed Sale No. 68 crude elsewhere than the refineries in the Los Angeles Basin, the number of oil spills would increase slightly, though not necessarily within the proposed sale area.

18.19

We agree that cumulative impacts must be addressed in the EIS and we have done so at the end of each topic. By placing cumulative impacts after each topic, the impacts of the project relative to other projects can be clearly identified. To address cumulative impacts separately would pull them out of context.

The EIS has been revised to include additional information on land use impacts of major proposals (non-OCS) for the region as well as OCS sales preceding and including Proposed Sale No. 68.

A sentence describing potential impacts and their effects upon endangered species has been added to the FEIS.

For the cumulative impacts on transportation, the following projects were considered in the EIS: Existing Federal and State oil and gas leases offshore California, existing shipping and Proposed Sale No. 68.

See response 18.15 for geohazard discussion.

18.20(1a)

We have reviewed the referenced letters. The comments in the State of California's June 19, 1980 letter focus specifically on the U.S. Geological Survey's natural and proposed California air quality regulations. A detailed description of these regulations and their implications for OCS activities is presented in Chapter III of POCS Technical Paper No. 81-7. Also refer to response 18.5(5a).

The comments in ARB's June 20, 1980 letter primarily focus on potential Lease Sale No. 53 impacts, but also include some general remarks concerning the U.S. Geological Survey's OCS air quality regulations. The comments concerning Lease Sale No. 53 were addressed in the FEIS for Lease Sale No. 53 on pages 7-8 and 7-9. Chapter III of POCS Technical Paper No. 81-7 includes a detailed discussion of the OCS air quality regulations. One particular comment in this attachment regarding the modeling is notable (last paragraph on page 7). It appears that ARB recommends that existing conditions are more appropriate to be used. Based on this comment, a portion of Lease Sale No. 68 air quality analysis was made with present initial conditions used for modeling. However, this approach was also commented upon by ARB (see Response No. 18.20.I(23)).

- 18.20(1b) Please see responses to Comment Nos. 18.20.I(1) to (27) and Comment No. 18.5.
- 18.20(2) The Air Resources Board comments on the Draft AQA were considered in preparing the final AQA. Specific responses to each comment are presented in responses 18.20.II(1) to (15).
- 18.20(3) The AQA provides a detailed inventory of potential offshore and onshore emissions associated with all phases of Proposed Lease Sale No. 68 development. However, the AQA assumes that the offshore emissions associated with Proposed Lease Sale No. 68 are subject to DOI air quality regulations. Onshore emissions are, obviously, subject to all applicable local, state and federal air quality regulations.
- 18.20(4) This is a typographical error. The correct emission factor is 494 pounds per thousand gallons.
- 18.20(5) The comment is correct. An erroneous emission factor was used to calculate the hydrocarbon emissions associated with production power generation. The revised hydrocarbon emission estimates are included in Table IV.A.5.b.ii-1. As noted by ARB, the error was on the conservative side and resulted in higher hydrocarbon emissions. However, reduction of the hydrocarbon emissions associated with power generation would not result in measurable changes in ozone levels predicted for Santa Barbara County Trajectory II and South Coast Trajectories II A and B (the highest concentrations calculated by modeling). The major source of hourly hydrocarbon emissions (approximately 90 percent) for these trajectories would be barge loading. However, incremental ozone concentrations for other trajectories would be lower than those calculated in the final AQA.
- 18.20(6) The assumptions for SO₂ emissions associated with flaring and gas combustion are based on an ARB study done by J.T. Leach (OPR, 1976). However, gases with high sulfur content could not safely be used in turbines. Therefore, lower levels of sulfur content for gases used in power generations were assumed.
- 18.20(7) The combustion conditions (such as temperature) in gas flaring are different than those associated with commercial gas combustion. Therefore, an average NO_x emission factor of 100 pounds per million cubic feet was deemed more appropriate than the maximum factor of 120 pounds per million cubic feet.
- 18.20(8) This comment is correct. The "Support for all Activities" emission factors should be shifted left by one column. However, as noted, this does not change any calculations.
- 18.20(9) Comment noted.
- 18.20(10) The correct reference is Table III-1 of POCS Reference Paper 81-7.
- 18.20(11) Table III.A.5-1 has been revised to reflect California's air quality designations as of July 1, 1981.
- 18.20(12) Table IV.A.5.b.ii-1 has been revised to include H₂S emissions.
- 18.20(13) Impacts are discussed in Section IV.C.2, rather than Section IV.B.
- 18.20(14) Both of the technical papers referred to on are not separate documents, but erroneous references to the AQA. The correct reference to the AQA is POCS Technical Paper No. 81-7.
- 18.20(15) Table IV.C.2.a-1 has been revised.
- 18.20(16) Table IV.C.2.a-3 has been revised.
- 18.20.I(1) Please refer to response 18.5.
- Over-water turbulent parameters were not available for this modeling. Measurements are only now (9/81) being first reported. Indications are that greater stability is appropriate. This means lower turbulence but greater wind shear dispersion. The implication for Gaussian short-term modeling (PTMAX, PTDIS, PTMTP) is unclear; however, the input parameters used correspond to maximum potential impacts, independent of their frequency of occurrence over the water. In conclusion, Gaussian models are only appropriate for screening. In that sense, they have not shown large impacts. (The reference to the EIS in Comments 18.20.I(1) through (27) is erroneous and, supposedly, meant to be Draft Air Quality Analysis Study.)
- 18.20.I(2) The fumigation case is not treated by standard EPA models. However, a simple estimate is possible from considerations of plume height and plume vertical standard deviation (40-100m and 40m, respectively) for the various types of platform emissions. Thus, except for Saturn turbines, the plume is about one σ_y above

the ground--60 percent of the maximum. Or, if the emissions were mixed to the ground from 100m, the impact would be similar to that of the Centaur and Cat diesels and up to 8 times that of the Saturn turbines. These levels would be reduced by the increased turbulence (no longer Stability Class E) and time-dependent nature of evolving coastal fumigation.

- 18.20.I(3) Light and variable winds in which emissions "pool" have not been successfully treated by conventional EPA models. Modeling these conditions requires assumptions of the size of the "pooling" area which must be related to the values and frequency of change in wind direction and speed. Such assumptions were made in the RAPT modeling and resulted in lower onshore inert pollutant concentrations. The fact is that under light and variable winds, dispersion generated by wind-shear dominates, and almost any assumption can be made. It is hoped that future over-water measurements will quantify the worst case anticipated for these conditions. It should also be noted that the assumption of a very low probability meteorological condition (which may occur only a few times per year) in conjunction with a low probability emissions scenario (which can occur a few days per year) could result in an impact scenario with an unreasonably low probability (once every few years).
- 18.20.I(4) The CDM modeling used inputs modified to partially account for the over-water conditions: (1) dropping of the urban modification of stabilities, and (2) straight-line transport using onshore STAR winds. Nominally, CDM does not permit nighttime stable conditions due to urban heat island effects. This was eliminated from the model used. When winds were onshore (the only time in the model that OCS emissions produce impacts), the straight-line distance leads to earlier arrival of emissions and, hence, lower dispersion. In reality, offshore winds tend to be more nearly parallel to the coast, only turning inland at close approach.
- A simple parameterization for over-water stability using existing data would improve these types of calculations. However, these results were used only for screening.
- 18.20.I(5) Trajectories were of different lengths, up to two days long.
- 18.20.I(6) While it is true that wind shear has not been included in the RAPT modeling, this is appropriate for worst-case

modeling. The effect of wind shear is to increase the dispersion of the emissions, thus reducing their concentrations and lower their direct impact. In calculating the secondary ozone impacts, the situation is less clear since the reactions are nonlinear. To partially offset this, the modeled ozone impact was reported as a range of values across the plume--from the more concentrated plume centerline to the outer fringes that merge with ambient levels. Thus, the reported impact range includes the more dispersive wind shear conditions. However, the area of high impact would be considerably different in size and location.

In addition, the previous analyses for Lease Sale No. 53 compared the OCS modeled impacts from a grid model (IMPACT) and a trajectory model (RAPT). The findings were that the grid model with greater dispersion (due to wind shear and resolution) soon lost the OCS emissions as they went below model accuracy.

It is believed by BLM and ERG that the trajectory approach is for localized emissions, conservative in the full range of impacts, and the only applicable methodology currently available.

- 18.20.I(7) The comment is acknowledged. Again, the air quality analysis for Proposed Lease Sale No. 68 is based on a conservative approach. Initial conditions were chosen from the range of observations to produce high onshore ozone levels similar to observed worst cases. Wind shear arguments for the initial conditions are inapplicable since they represent wide-scale levels and they are required to produce the observed ozone.
- 18.20.I(8) The authors know of no other methodology that has the potential of assessing the OCS emissions impacts.
- 18.20.I(9) This is the same comment as Nos. 18.20.I(6) through (8) above since it is only wind shear, in general, that could distort the RAPT wall of cells. Replies to comments 18.20.I(6) through (8) also apply here.
- 18.20.I(10) Again, the phenomena commented on is wind shear, and the effects would be greater dispersion and lower direct impacts which are already simulated within the range of RAPT results.
- 18.20.I(11) Deposition for these calculations was set to zero for the sake of conservatism and for lack of good data appropriate to the over-water and over-land transport.

- 18.20.I(12) The Cal Tech mechanism used was presented to both the Air Resources Board and Cal Tech researchers at the start of this study (Fall, 1980) and was current at that time. It must be recognized that photochemical modeling is a dynamic field which is evolving constantly. It would be impractical to update the techniques which were approved by interested parties at the beginning of the study to incorporate the latest advancements, which are then subject to further approval by the scientific community and regulatory agencies.
- 18.20.I(13) A listing of RAPT sample runs and documentation was provided to the ARB in Spring 1980 for review and comment. No comments were received. Discussions of RAPT were conducted with the ARB staff during a period spanning the Summer of 1979 through the present. Form & Substance, Inc. would welcome the ARB or any other appropriate agency to review RAPT. However, since the model is proprietary, it would be inappropriate to publish a listing. (The reference to a listing came about due to the use of the documentation sent to ARB for its review.)
- 18.20.I(14) Comment noted.
- 18.20.I(15) See responses to comments 18.20.I(1) to (4).
- 18.20.I(16) A review of climatological mixing heights resulted in a daytime average value greater than 300m (see Lease Sale No. 53 analyses). This was higher than the reasonable plume rise, so its exact value was not of major importance. During stable conditions, the "mixing height" is even less important.
- 18.20.I(17) The mixing height of 150m was combined with E stability for the worst case. An assumed inversion height at the maximum plume rise (100m) would result in higher impacts by up to a factor of approximately 1.9 in Gaussian models.
- 18.20.I(18) Terms used to describe frequency of occurrence for the trajectories are assessed from familiarity of the local conditions. However, these may be misleading since only occurrence during high ozone episodes are important and these are atypical events.
- 18.20.I(19) A typographical error in conversion units occurred in the text. The values should have been 4.5 meters/second and 800 feet.

- 18.20.I(20) Trajectories such as Santa Barbara III and South Coast I have the pooling or accumulation assumed (4 hours spent within 10 miles). Stability is the only dispersion parameter entered into RAPT and, typically, the trajectories use a stable E below about 100m and a stable F above that level when over water. This changes to typically a 300 to 500m interface over land lending to the possibility of fumigation.
- 18.20.I(21) a) A listing of the computer code was forwarded to the ARB [see reply to 18.20.I(13)].
- b) The RAPT cell sizes were DY=400, 600, 1200, 5500m and DZ=100, 100,250, 600,600.
- c) As a RAPT trajectory passes over sources, their emissions are added to the appropriate cell.
- d) Boundary conditions are not used in RAPT. The outermost cell boundary is set far enough (9.3 km) to be at ambient levels so that there is no transport to/from the outside.
- e) The output of gridded emissions are multiple pages of computer printout. The onshore emissions are only marginally important since most of the trajectory is at sea. The important OCS emissions are tabulated in Tables C-2 through C-42.
- f) Plume rise enhancement is not utilized in RAPT due to the coarse resolution (100m) of the grid. Again, this assumption is consistent with our conservative approach.
- 18.20.I(22) This methodology is the best one known to the Environmental Resources Group (ERG), consultants to BLM. Numerous discussions were held with others interested in the modeling results including Federal, State and local agency personnel, and no better methodology was suggested. The requirements we have set on a methodology include an assessment of impacts for worst-case ozone levels and maximum use of as much observational data as are available.
- 18.20.I(23) Previous similar air quality studies that "rolled back" analyses at the highest ozone levels. Little is known about the initial conditions for present high ozone events, let alone the future effects of hypothetical emission reductions. Uncertain trajectory origin also contributed to the "status quo" assumption.

- 18.20.I(24) Hydrocarbon splitting factors are a second order effect in light due to the lack of relevant trajectories connecting the OCS emissions to (worst-case ozone) hydrocarbon data. Certainly the hydrocarbon mix could be less reactive than the Los Angeles mix provided by the ARB hydrocarbon inventory, and its effect on ozone is unclear. This study, being an applied one rather than research-oriented, leads to "best guess" assumptions rather than unending sensitivity analyses. BLM will appreciate receiving study results from research groups like the ARB or Cal Tech performing the analyses.
- 18.20.I(25) Comment is acknowledged; however, no adjustment other than the initial conditions supplied by the ARB (corresponding to 0500 downtown LA) was used.
- 18.20.I(26) Comment is acknowledged. The claim for RAPT is that it uses the Cal Tech chemistry in a finite difference grid framework to solve the conservation of mass equations with approximations for vertical and horizontal dispersion. A formulation permits evaluation of localized emissions impacts. The Los Angeles application and others support its credibility which rests ultimately on the chemistry. The Cal Tech chemistry was used based on the recommendation of the ARB.
- 18.20.I(27) Methodologies used in this study were presented to the ARB for comment and review. No alternatives were provided nor negative comments were made. The BLM continues to welcome any constructive alternatives the ARB may have.
- 18.20.II(1) The exemption levels established by the U.S. Department of the Interior (DOI) air quality regulations are based on the emissions associated with each single facility and depend upon the distance of the facility to the shore. (Please refer to Section III for a more detailed discussion of DOI regulations.) As stated in the report, based on the production levels and approximate location of each platform provided to us by USGS, emissions estimated for the proposed facilities were less than DOI exemption levels. Therefore, according to DOI regulations, no control measures were assumed.
- 18.20.II(2) The Air Resources Board discusses the extent of mitigation measures in terms of attainment/nonattainment areas. The subject of specific mitigation measures for Proposed Lease Sale No. 68 is irrelevant. Emissions from all Proposed Lease Sale No. 68 platforms were estimated to be below allowable limits as dictated by the DOI regulations, thus exempting the facilities from emission controls. In addition, the air quality analysis was performed considering the San Diego Air Basin as nonattainment for nitrogen dioxide - its current status, and not based on an uncertain future reclassification.
- 18.20.II(3) In applying the DOI regulations to the emissions associated with each platform, a year in which both production and development drilling would occur was chosen in order to maximize emissions. To be conservative, the maximum rate of emissions was checked against the DOI exemption level for the platform under consideration. It was found that even these higher emission levels associated with a combination of production and development activities would be below the exemption level. However, it is not completely clear whether or not developmental drilling is subject to offset requirements. Although these emissions are associated with a temporary activity, they are emitted from a permanent facility.
- 18.20.II(4) The study considers both short-term and long-term effects of emissions associated with the proposed project. The predicted changes in short-term and long-term ambient air quality were compared with the DOI regulation "significance levels", the air quality standards and the existing ambient air quality in each air basin (refer to Section VI). In many cases, the significance levels or standards are based on annual averages. In those cases predicted annual averages were used.
- 18.20.II(5) Comment noted, changes made in text.
- 18.20.II(6) Comment noted, changes made in text.
- 18.20.II(7) For air quality analyses done within the framework of the DOI OCS regulations, specific formulae are provided which determines whether or not platforms will be subject to mitigation and/or trade-offs. Thus, if emissions from platforms do not exceed exemption levels (as is the case for Proposed Lease Sale No. 68), then discussions of mitigation, nonattainment/attainment, trade-offs, etc. are unnecessary. However, a more traditional impact analysis, performed by computer modeling, indicated that San Diego Air Basin would not be adversely impacted by Proposed Lease Sale No. 68.
- 18.20.II(8) As stated on page V-3 of POCS Technical Paper No. 81-7, drilling rigs currently used in California are fabricated

onshore and in many cases outside California. Therefore, emissions associated with their fabrication are not listed in the study. Emissions associated with towing and installation of the drilling rigs depends on the type of rig and its origin. However, total emissions associated with installation of mobile rigs, which may last 2 to 3 days, are not significant when compared with exploratory drilling emissions. The type and origin of drilling rigs that may be used for future operations cannot be determined with any certainty for this study. Even for specific projects on a particular offshore parcel, the type of rig available at the start of the project cannot be guaranteed. Drilling rig availability depends on the worldwide demand on the equipment. However, regardless of the rig type, energy required to drill a particular well (and pollutants emitted in generating the energy) remain the same. Conservative assumptions regarding the type of generators likely to operate on the rigs were made for this study. Text changed to reflect the response to this comment.

- 18.20.II(9) The ARB states that "the draft appears to use annual average emissions exclusively in determining significance . . ." For every zone, in addition to annual emissions, both daily and maximum hourly emissions were estimated. Furthermore, the reactive modeling reflects hourly emissions and the inert modeling reflects hourly, 8-hour, 12-hour, daily or annual emissions, depending on the pollutant.
- 18.20.II(10) The comment deals with pollutants emitted during transit and the effects of dispersal over a geographic area. The ARB feels that the effects of dispersal are over-emphasized and states that "no responsible air pollution control agency subscribes to the concept of dilution as a primary strategy for mitigation . . ." At no point in the air quality assessment is dilution suggested as a mitigation measure. Support- and transportation-related emissions are included in the tables and in the totals as part of the emissions associated with Proposed Lease Sale No. 68. However, pollutants from mobile sources located, in some instances, 15 miles offshore and travelling over a distance of 129 miles (as in the case of transport from Point Conception in the Santa Barbara Channel area), does not have the same impact as a point source emitting the same quantity of pollutants. Such a situation thus warrants a qualifying comment. For example, the SCAQMD and ARB have suggested that tanker emissions in the Santa Barbara Channel would only

partially be transported to the South Coast Air Basin (SOHIO EIR, Volume 5, Part 1).

- 18.20.II(11) The comment deals with emissions resulting from pipeline installation and the statement of "relatively small" magnitude of emissions on an annual basis as opposed to the lack of a statement concerning substantial short-term emissions. In many instances (pages V-26, V-79, V-80 and V-110 of POCS Technical Paper No. 81-7, for example), it is noted that a major operation contributing to maximum hourly and daily NO_x, CO, and TSP emissions would be pipeline installation.
- 18.20.II(12) Comment noted. The EIS has been revised.
- 18.20.II(13) Please refer to response 18.20.II(3).
- 18.20.II(14) The comment concerns the assumption that a platform with offshore gas processing will have one-third more components than a comparable platform without gas processing. An exhaustive literature search resulted in no data on offshore gas processing operations. Thus, based on the average number of components for both onshore gas processing plants and offshore platforms (obtained from an API report "Fugitive Hydrocarbon Emissions from Petroleum Production Operations"), and the best engineering judgment, the assumption concerning components was made.
- 18.20.II(15) As part of Section V of POCS Technical Paper No. 81-7, emission scenarios were developed to be used as input for air quality modeling. Based on the averaging times used for ambient air quality standards for each pollutant (such as one-hour, 8-hour, daily, etc.), the maximum possible emission rates for that particular averaging time were calculated. For example, the ambient ozone standard is based on one-hour averaging time. For purposes of study, the maximum one-hour emissions associated with a platform were considered. For hydrocarbon emissions (which are precursor to ozone), the maximum hour was found to be during the loading of a tanker at platform. Therefore, this one-hour loading timeframe would exclude any emissions associated with tanker transit or unloading emissions (which would occur hours later), but includes emissions associated with platform production, and support vessel transit emissions.
- 18.20.III These comments focus specifically on the U.S. Geological Survey's national and proposed California air quality

regulations. A detailed description of these regulations and their implications for OCS activities is presented in Chapter III of POCS Technical Paper No. 81-7. Also refer to response 18.5.a.

- 18.20.IV These comments are primarily focused on potential Lease Sale No. 53 impacts, but also include some general remarks concerning the U.S. Geological Survey's OCS air quality regulations. The comments concerning Lease Sale No. 53 were addressed in the FEIS for Lease Sale No. 53. Chapter III of POCS Technical Paper No. 81-7 includes a detailed discussion of the OCS air quality regulations. One particular comment in this attachment regarding the modeling is that existing conditions are more appropriate to be used. Based on this comment, a portion of Proposed Lease Sale No. 68 air quality analysis was made with present initial conditions used for modeling. However, this approach was also commented upon by ARB (see response 18.20.I).
- 18.21 Comment noted.
- 18.22 The Eleventh Coast Guard District, as part of the Port Access Route Study in Southern California, has investigated the existing Precautionary Area offshore the Ports of Los Angeles and Long Beach. The Coast Guard proposed to reduce the size of existing Precautionary Area leaving only one Proposed Sale No. 68 tract wholly within the Precautionary Area. Consequently, the Coast Guard recommended deletion of Tract No. 165, and we have presented this deletion as Alternative 5 in the FEIS. For additional information on the recommendation by the Coast Guard on the Precautionary Area, see Sections II.B.5 and III.C.7 (Transportation Systems).
- 18.23 The deletion of tracts in the Adjunct to the Santa Barbara Ecological Preserve (Buffer Zone) is considered in the FEIS as Alternative 3.
- 18.24 The DEIS and FEIS both address cumulative impacts. See response 18.19.
- 18.25 The EIS has been revised to indicate that delaying the sale would allow more time to assess the cumulative impacts from previous leasing, exploration and development in the area and to determine appropriate mitigation measures. However, cumulative impacts are primarily discussed in Section IV.C and Mitigation is primarily discussed in Sections I.B.5, I.B.6 and I.B.7.

- 18.26 The oil spill trajectory model as used by BLM shows a 6% probability of a spill which occurs in these tracts impacting land segment 33 and a 7% probability of impacting land segment 36. These values, when combined with the low probability of a spill occurring from the limits in question, shows a relatively low risk to the area from the leasing of these tracts (POCS Technical Paper No. 81-2).
- 18.27 The EIS has been revised to include an alternative (No. 4) for the deletion of tracts adjacent to the Santa Monica Bay.
- 18.28 As indicated in the EIS, delaying the Sale most likely would postpone impacts to all resources. This statement by inference includes impacts to resources near Santa Monica Bay.
- 18.29 The EIS has been revised as suggested.
- 18.30 The fisheries training program stipulation was included in Sale No. 53 because there was no significant history of oil and gas development in the area and we wanted to ensure that potential conflicts were identified. In Southern California, the oil and gas industry has worked with fishermen for years and, although not all conflicts have been resolved, the industry is much more familiar with conflicts and concerns of the Southern California fisherman.
- 18.31 See response 18.47.
- 18.32 See responses 18.19 and 18.29.
- 18.33 The EIS addresses impacts to tracts adjacent to Santa Monica Bay under Alternative 4.
- 18.34 The proposed biological stipulation is discussed in Chapters I and IV. Delay of Sale is discussed in Chapters II and IV.
- 18.35 The EIS addresses impacts to the vessel precautionary area under Alternative 5 and impacts to the adjunct to the Santa Barbara Channel Ecological Preserve under Alternative 3.
- 18.36 Comment noted.
- 18.37 Pinnipeds are commonly seen feeding near platforms (Holly and Hondo) indicating that sound generated by producing platforms are not causing avoidance behavior

in these animals. The main advantage of a six mile buffer is it will add time (3-4 hours) before a spill would reach the islands allowing more time for emulsification, loss of toxic volatiles and containment.

- 18.38 Comment noted. Information on oiling of fur seals is included in the EIS.
- 18.39 No revision. Refer to the Sale No. 48 visual of marine mammal and seabird resources. Also see responses 18.37 and 50.5.
- 18.40 Section IV.A.1, Tracts Within the Proposed Marine Sanctuary:
- "The only effect that leasing tracts within the marine sanctuary will have on the oil spill analysis will be in the time required for a potential spill to reach shore."
- For a discussion of containment, see responses 18.48 and 18.53.
- 18.41 Comment noted. However, we are pointing out the risk differences but neither support nor oppose Alternative 2.
- 18.42 See response 18.22.
- 18.43 See response 18.23.
- 18.44 See response 18.26 and 18.27.
- 18.45 Potential translocations of the sea otter to San Nicolas Island (land segments Nos. 49 and 50) and expected impacts from a Sale No. 68 spill striking that island are discussed in the FEIS (Table IV.A.1.a-1.)
- 18.46 See response to 18.30.
- 18.47 Stipulations provide for surveys of significant biological areas prior to drilling. We feel that the State's proposal would put an unnecessary burden on the oil industry as many of these tracts may never be drilled.
- 18.48a By special methods of disposal of drilling muds and cuttings, we assume the state means by barging to onshore disposal facilities. BLM does not feel there is sufficient justification for including this stipulation in the EIS. However, EPA through NPDES permits has final regulatory authority.
- 18.48b Arthur D. Little, Inc. Report No. CG-D-90-77, June 1977, by P. K. Raj entitled "Theoretical Study to Determine

the Sea State Limits for the Survival of Oil Slicks in the Ocean," indicates that oil slicks in sea states over 3 meters would emulsify into the water column and disappear from the water surface.

In addition, Commander Onstad, Eleventh Coast Guard District, Long Beach, California, has indicated the statement in the EIS (end of Section IV.A.1) regarding oil spill containment in rough seas, made by Admiral Hayes before Congress, is correct.

Commander Onstad further stated that containment equipment is not generally deployable in the 8-10 foot seas mentioned in the DEIS (equipment usually cannot be deployed in seas greater than 5-7 feet). Once deployed, however, equipment will be effective in the rougher seas. Clean-up effectiveness does decrease in rough seas but cost effective recovery of oil is still possible.

BLM agrees that clean up equipment is not effective in currents greater than 1-2 knots. However, currents in the California OCS are usually less than 0.5 knots.

The Coast Guard's knowledge of containment capabilities was obtained from clean-up experience and containment activities in the Ixtoc oil spill in Mexico and from technical experts from the EPA, USGS and USCG.

We are aware that there is a controversy over oil spill clean up capabilities and are constantly updating our information.

18.49 See response 18.19.

18.50 These issues were addressed in the DEIS and FEIS.

18.51 See POCS Technical Paper No. 81-1, page 3.

If the oil companies decide to tanker California crude to be refined elsewhere, the risk of oil spills would increase slightly.

18.52 The northern fur seal is not an endangered species (about 25,000 fur seals are harvested each year in Alaska). The EIS mentions that about half of the SCB fur seals are located in a rookery having a very low risk from hit by an oil spill. The brown pelicans fledglings are vulnerable for a brief period, a few days, each year. The probability of the one-predicted spill, resulting from Proposed Sale No. 68 striking

during this critical period is very low. If it did occur, the chicks are not all fledged at once, so the impacts to this age class should be low and to the species as a whole minimal. Pelicans are long lived birds. Adults, being less vulnerable, should survive and breed again. See response 18.19.

- 18.53 The oil spill co-ops are a second line of defense. All drilling platforms have spill containment equipment on site. See also response 18.48.b. For a summary of containment equipment in the SCB, see California Coastal Commission Preliminary Draft Oil Spill Response Capability, Phase 1: Clean Seas (April 1981) and Appendix H to the EIS.
- 18.54 The EIS has been clarified.
- The different numbers predicted by the spill model reflect different modeling routines: The 56% chance of oil hitting land uses an island represented by a segment (straight line), whereas the 78% chance of oil hitting land uses a target represented by a figure with an area (a rounded body) having a greater surface area.
- 18.55 See response 18.48.b.
- 18.56 See responses 18.10 and 18.22. Cumulative impacts have been revised. See Section IV.C.17.
- 18.57 The comment is based upon typographic errors in Table I.B.1.d-2 which have been corrected. Furthermore, cumulative effects of drilling muds and cuttings from all OCS Sales in the area are very specifically addressed in Section IV.A.5.
- 18.58 See response 18.19.
- 18.59 The EIS has been revised as appropriate. Also see responses 18.25 and 18.28.
- 18.60 Comment noted.
- 18.61 Proposed Sale No. 68 tracts that were deleted from previous sales are discussed in Appendix F. Tracts not bid on are being reoffered for lease in light of recent economic information. In general, deleted tracts have been reoffered to allow for further analysis in light of new technology and new information.

The U.S. Geological Survey (USGS) technical staff has completed the geological hazards evaluation for the tracts tentatively selected for proposed Sale No. 68 (Burdick and Richmond, in prep.). The evaluation is based on the interpretation of high-resolution (HR) geophysical data collected by Racal-Decca Survey, Inc., under contract to the USGS (Contract 14-08-00010-19235), and HR seismic reflection data collected for Sale No. 48 by McClelland Engineers, Inc., under Contract 14-08-0001-17200. A 0.5 x 1.5-mile grid was used for both surveys. Geologic Division, Office of Marine Geology, personnel were consulted to assure that all available data and interpretive expertise were incorporated in the evaluation.

Geologic hazards are defined by DOI (USGS) as any geologic features or processes, existing or potential, that would inhibit the development of oil and gas resources. Stipulations discussed below are recommended for active faults, mass transport over a significant portion of the tract, steep slopes (10°), and steep-walled submarine canyons. Tracts with these hazards may pose a problem for selection of sites for drilling or bottom-founded structures; in-depth engineering studies transcending usual site surveys may be required to evaluate potential geologic hazards and to provide input for engineering design. Faults are considered active where there is offset young sediment (Quaternary) and sedimentation has been essentially continuous, where the sea floor is offset or where there is a historic record of important earthquake activity. Active faults are hazardous from the standpoints of both rupture and potential sources of shaking. Mass transport of sediments in the Southern California offshore occurs as sediment slides, slumps, sediment flows, and sediment creep. The existence of mass transport deposits indicates localities of past sediment instability and zones of possible future failure. Steep slopes (greater than 10°) and steep-walled canyons, especially those with sediment cover, are considered hazards.

Geologic features that are hazardous in their present state, but whose effects can be feasibly mitigated through existing technology and design are not considered cause for the recommendation of geologic hazard stipulations. These features are shallow faults, buried channels, shallow gas, gas-charged sediments, and unstable fan deposits. Deep faults are not considered hazardous to oil and gas resources development. Buried channels are identified by the

irregular erosional contact between the younger infilling sediments and the older sediments. Contrasts in load-bearing capacity can exist within the channel fill and between the channel fill and the surrounding sediments. Shallow gas is identified on the basis of amplitude anomalies or bright spots, indicating confined gas accumulations with possible abnormal pore pressure. Water-column anomalies occurring in association with outcrop of older sediments, steeply-dipping beds, or faults are possible hydrocarbon seeps. Gas-charged sediments, identified as acoustically turbid zones, are zones of unconsolidated to semi-consolidated sediments saturated with interstitial gas under normal to near-normal pressures. Large contrasts in load-bearing capacity may exist within these zones or between these zones and the surrounding sediments. Interstitial gas can effectively lower the shear strength of sediments and can contribute to spontaneous liquefaction of sediments when subject to cyclic loading under abnormal conditions. Fan deposits associated with the submarine canyons adjacent to the Sale area do not exhibit coherent bedding and are considered potentially unstable, but these can be mitigated through existing technology.

In the DOI (USGS) staff's professional judgment, the geologic hazards identified in the sale area do not pose a threat to safe development of resources since the hazards identified can be adequately mitigated by proper exploration and development operational techniques. The proposed stipulations discussed below will provide further assurance that the environment will be protected.

From the proposed Sale No. 68 prelease surveys discussed above and other pertinent data, the U.S. Geological Survey has identified tracts, listed below, that could have the potential for the following adverse geologic conditions:

Mass Movement Tracts: 7, 8, 9, 11, 12, 14, 18, 19, 25, 26, 27, 28, 29, 30, 34, 35, 36, 37, 38, 39, 52, 53, 61, 62, 63, 65, 66, 67, 99, 101, 102, 128, 129, 137, 159, 160, 162, 163, 168, 170, 172, 174, 175, 177, 178, 182, 183, 184, 205, 208.

Submarine Canyons or Channels Tracts: 6, 9, 13, 21, 44, 45, 56, 60, 65, 66, 67, 99, 101, 102, 105, 133, 142, 170, 176, 183, 189, 190, 192, 193, 208, 209, 220, 221.

Active Faults Tracts: 59, 65, 66, 67, 68, 73, 82, 83, 84, 85, 86, 99, 123, 147, 160, 163, 168, 170, 171, 173, 199.

OCS Orders and other regulations (30 CFR 250) ensure that tracts are only developed in a technologically sound and safe manner. Additionally, proposed stipulations, discussed in Section I.B.6., will require further safeguards.

Specifically, the proposed Sale No. 68 tracts identified above by the United States Geological Survey (USGS) as potentially hazardous due to mass transport, steep slopes or steep-walled canyons, and/or active faults based on pre-sale high resolution surveys will be subject to the following proposed stipulation.

Exploratory drilling operations, emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas, and the emplacement of pipelines will not be allowed within the potentially unstable portion of this lease block unless or until the lessee has demonstrated to the Deputy Conservation Manager, Offshore Field Operations (DCMOFO) satisfaction that mass movement of sediments is unlikely or that exploratory drilling operations, structures (platforms), casing, wellheads and pipelines can be safely designed to protect the environment in case such mass movement occurs at the proposed location. This may necessitate that all exploration for development of oil or gas be performed from locations outside of the area of unstable sediments, either within or outside of this lease block.

If exploratory drilling operations are allowed, site specific surveys shall be conducted to determine the potential for unstable bottom conditions. Also, an extension of these surveys may be required outside of the leased block. If emplacement of structures (platforms) or seafloor wellheads for production or storage of oil or gas is allowed, all such unstable areas must be mapped. The DCMOFO may also require soil testing before exploration and production operations are allowed.

The combination of the geologic stipulation and existing regulations require the lessees to conduct site specific surveys prior to any approval of exploration and development actions. Exploration permits require 2000 ft. grid geologic hazard surveys. The hazard surveys provide the USGS geophysicists with information to determine slope, faulting, natural gas seeps, possible high pressure zones, old river channels, and unconsolidated sediments and slope stability. From the report the geophysicists prepares on this information, the USGS engineer will determine if geological conditions are acceptable for exploration operations. If the geological information indicates conditions too severe for exploration, the exploration plan will not be approved or the operators will be required to move their exploration site to an area safe for exploration.

Permits for all platforms require a geological hazard survey similar to the exploration survey, except the survey is done on a more detailed grid. Additionally, USGS requires soil analyses to determine if the soil can support the platform. From the geophysicist's report, the USGS engineer determines if the geologic conditions are suitable for the placement of a platform. If the geological information indicates conditions too severe for platform placement, the platform plan will not be approved or the operators will be required to move their platform placement site to an area safe for platform placement.

Additionally, the platform plans must go through a Platform Verification Program. The Platform Verification Program is a mandatory and integral part of the review and approval process for Plans of Exploration and Plans of Development/Production in addition to addressing platform design, fabrication, and installation. The major thrust of the Program assures that new fixed or bottom-founded oil and gas platforms in frontier areas can function safely in unusual or extreme environmental conditions. In addition to the review by the USGS Platform Verification Program Committee, an independent review is completed by an expert outside the Federal government. Independent third-party experts are evaluated and certified by the USGS on the basis of technical competence and demonstrated experience in offshore engineering. They are then placed on an approved list and selected by the lessee. The technologies involved in implementing the Program entail representation from such diverse disciplines as structural engineering, soil mechanics, geology, geophysics, oceanography, meteorology, hydrodynamics, quality assurance, statistics, and computer science.

In addition to the Platform Verification required under OCS Order No. 8 all the OCS Orders and other regulations under 30 CFR 250 are important in maintaining safe and proper OCS oil and gas operations. OCS Orders 2, 5, 6, 8, and 9 and 30 CFR 250.12 and 30 CFR 250.41 are specifically important in ensuring oil and gas operation on the tracts listed above will be explored and developed in a safe manner.

OCS Order 2 pertains to drilling operations. This order basically specifies the regulation for drilling wells; types of blow out prevention equipment required; type of mud, casing and cement programs required under varying geologic conditions; and training all operators must have for crews.

OCS Order 5 pertains to production safety system. This order basically requires the use of best available and safest technology; safety equipment, work done under standards formulated by reputable societies (API, ASME, APPE); and the requirement for down hole safety device. The down hole safety device will automatically close in upon failure, thus in case of well rupture the well would shut in and gas and oil would be stopped from moving to the surface.

OCS Order No. 6 basically supports OCS Order No. 2.

OCS Order No. 8 pertains to platforms and structures. This OCS Order basically requires the platform verification program.

OCS Order No. 9 pertains to pipelines. This OCS Order is similar to OCS Order No. 8 but it pertains to pipelines. The Order requires that the pipeline systems are designed to withstand those conditions it will be subjected to.

30 CFR 250.12 pertains to the USGS Director's authority to suspend production or other operations. The Director has the authority to suspend production or other operations if lessee violates any applicable law, regulation OCS Order, or condition of permit, or if continued operation poses a threat of serious harm to life or the environment.

The lease may be cancelled if the Secretary determines that continued operation would pose serious harm to life or the environment and the threat of harm will not disappear or decrease to an acceptable extent within a reasonable period of time.

30 CFR 250.41 pertains to well control. This regulation requires the lessee to control the well at all time.

See also responses to 18.15 and 18.70.

18.62 Comment noted. As previously explained, the study cited in the DEIS by Richmond, et al., was considered in the preparation of the DEIS geohazards analysis. In addition, Burdick and Richmond (in prep.) was used to identify tracts proposed for stipulation. See responses 18.15 for information on geohazards and 18.16 for discussion of sharing geological hazard information with the State of California.

18.63 Comment noted. See responses 18.15 and 18.61.

18.64-65 See response 18.15.

18.66 The proposed Geological Stipulation requires that the lessee demonstrate to the Conservation Division Manager that any potential hazard non-existent by more current site specific surveys, or show that the hazard(s) can be mitigated prior to any oil and gas activities. Inherent in the approval process is the understanding that the best available information is being reviewed and that the best available and safest technology will be employed to mitigate adverse impacts. See response 18.61.

18.67 See response 18.16.

18.68 The EIS has been revised as suggested.

18.69 See response 18.61 and 18.78.

18.70 The following table summarizes the relationship between the 18 identified Proposed Sale No. 68 tracts in Santa Barbara Channel and the disposition of the identical areas in Sale No. 48:

<u>Block</u>	<u>68 Tract</u>	<u>48 Tract</u>	<u>48 Disposition</u>
53N-72W	13	19	Offered, no bid
52N-73W	18	27	Offered, no bid
52N-72W	19	28	Offered, no bid
51N-77W	25	38	Offered, no bid
51N-76W	26	39	Offered, no bid
51N-75W	27	40	Offered, no bid
51N-74W	28	41	Offered, no bid
51N-73W	29	42	Offered, no bid
51N-72W	30	43	Offered, no bid
50N-78W	36	54	Deleted due to hazards
50N-77W	37	55	Offered, no bid
50N-75W	38	57	Offered, no bid
50N-74W	39	58	Offered, no bid

49N-74W	47	70	Offered, no bid
53N-71W	60	20	Deleted due to hazards
52N-71W	61	29	Offered, no bid
52N-70W	62	30(partial)	Offered, no bid
51N-70W	63	--	Not offered

However, eleven tracts deleted from Sale No. 48 due to potential geohazards are being considered in Proposed Sale No. 68.

<u>Block No.</u>	<u>Proposed Sale No.68 Tract No.</u>
31N-33W	183
31N-34W	182
31N-37W	181
31N-38W	180
32N-34W	175
32N-35W	174
50N-78W	36
50N-84W	33
53N-71W	60
53N-86W	12
54N-82W	9

These tracts are being reconsidered due to changes in the criteria previously used for geohazards deletion recommendations. The major criterion for deletion in Sale No. 48 was coverage of one-half or more of a tract by hazards elements; this was not used for Sale No. 53 earlier this year nor is it used for Proposed Sale No. 68. The eleven tracts were resurveyed and interpreted for Proposed Sale No. 68. The proposed geohazard stipulation (see Section I.B.6.c) has been recommended for tracts 9, 12, 36, 60, 174, 175, 182, and 183. No stipulation has been recommended for tracts 33, 180, and 181 due to redefinition of steep slope. Further information is provided in USGS's geohazard open-file report (Burdick and Richmond, in prep.) to be released in March, 1982. See responses 18.51 and 18.61.

18.71 Comment noted. As explained in responses 18.15, the study cited in the DEIS by Richmond, et al, was considered in the preparation of the DEIS geohazards analysis. In addition, Burdick and Richmond (in prep.) was used to identify tracts proposed for stipulation.

1872 Comments noted. See responses 18.61 and 18.15.

18.73 See responses 18.15 and 18.61.

18.74 Comment noted. See responses 18.15 and 18.61.

18.75 Comment noted. See responses 18.61 and 18.66.

18.76 See response 18.16.

18.77 The EIS has been revised as suggested. Also see response 18.96.

18.78 The shallow gas deposit requirement referred to in the comment was not a standard lease stipulation for Sale No. 53. A notice concerning shallow gas deposits was included in the Notice of Sale for Sale No. 53 to provide some additional information on requirements that would be imposed after the sale. However, even though this requirement is not proposed as a separate stipulation for Proposed Sale No. 68, lessees are required to conduct site specific geological hazard surveys prior to exploration or development activities on leased blocks to demonstrate to USGS the operational feasibility and safety of the proposed activities. Where surveys indicate the presence of hazardous conditions not previously noted, the USGS has the authority to require the lessees to conduct proposed activities safely.

18.79 Paragraph 1. The EIS has been revised to clarify long-term vs. short-term impacts.

Paragraph 2. Comment regarding acute toxicity disagrees with material in DEIS. No revisions will be made because BLM believes sufficient offshore species (two California species included) have been tested to date to allow some conclusions about acute toxicity to be made.

See response 18.6 for comments in Paragraphs 3 and 4.

18.80 We concur that impacts from oil and grease cannot be compared with oil spills. Statements in the EIS were not made to justify the occurrence of just a little added volume of pollutants into the system, but only to describe the state of the environment near Los Angeles as it exists. This is clarified in the EIS. Also, refer to Section III.C.1 of the Sale No. 48 FEIS for a brief discussion of this topic.

18.81 A site specific oil spill containment plan is included in every exploratory and development plan. All concerned agencies have an opportunity to review these plans.

18.82-84 Deletion of tracts within 6 nautical miles of the Northern Channel Islands is considered as Alternative 2. BLM has considered larger buffer zones and decided there is not sufficient justification for including such an alternative in the EIS. However, as has occurred previously, the Secretary of the Interior has the option to delete any tracts he deems appropriate.

18.85 Comment noted.

18.86 The following responses are made to comments submitted by the California Department of Fish and Game. These comments were originally submitted for the Sale No. 48 DEIS and were received too late to be included in that EIS.

Information cited is out of date. More recent material, by same authors, cite other areas as critical and delete many areas formerly thought significant. The presence of a species does infer vulnerability. These animals have been coexisting with oil, from natural seeps, for thousands of years. The chance of a spill occurring is small. The likelihood of a spill causing major impacts to these animals is even smaller.

BLM did not present its contractor recommendations as it felt the in-house analysis was more thorough.

Regarding comment number 1 on page 48, three miles should be a sufficient distance to satisfy this concern.

The predicted one spill from Proposed Sale No. 68 of over a 1,000 bbl during the 25 year life of production is not anticipated to imperil marine mammal or seabird populations on a long term basis. See section IV.A.1, Ecosystem Effects. In regards to the three recommendations on page 48: Number 1 has been answered above; Number 2 is a definition of containment; Numbers 3a, b, and c are aspects of the proposed biological stipulation; Number 3d: BLM supports consistency in research techniques but has no control in enforcement of techniques.

The importance of the SCB to marine mammals and seabirds has been stated in the DEIS.

The cumulative impact section alludes to these problems and their significance to marine mammal and seabird population.

BLM disagrees with the statement that "Irreversible and irretrievable commitment of fish and wildlife

resources will most certainly occur." Habitat loss is anticipated to be minimal. In fact, some habitats will be created by construction of platforms.

Mainland habitat acquisition is not an acceptable option as: (1) areas potentially vulnerable are aquatic or are within the splash zone. Acquiring terrestrial habitat would not benefit marine mammals or seabirds; and (2) potential losses are expected to be transitory. Habitats would not be destroyed by this proposed lease Sale. Animals may be killed but the population is expected to recover.

The baseline study was completed in 1979:

- 1) BLM is currently evaluating various monitoring programs.
- 2) Beached bird survey results are inconsistent and are not a suitable indicator of pollution or seabird mortality.
- 3) BLM is considering more economical and efficient measures to evaluate effects of OCS oil and gas development.
- 4) See above.

18.87

Resolution 67-78 has been placed in the file. The Resolution expresses the State Parks & Recreation Commission's "strong concern" over the proposed lease and urges "... serious consideration be given to alternative sources of energy..." The concern is voiced in response to their interpretation of the EIS, i.e., (1) adverse effects to 40 units in the State park system; (2) 20-40 years disruption of State Beaches; (3) temporary closing of park and recreation sites; (4) serious adverse impacts on archaeological and other resources.

18.88

Comment noted. Deletion of the Sanctuary is considered in Alternative 2.

18.89

Comment noted.

18.90

Comment noted. The proposed Cultural Resource Stipulation (see Section I.B.6) is invoked prior to any drilling activity on any tracts the DCMOFO believes has a site, structure or object of historical or archaeological significance. The guidelines for conducting a survey for these cultural resources are limited to areas in less than

394 feet (120 meters), and require an approximate area of one square mile centered on the site to be surveyed.

18.91 See responses 18.48.b and 18.53.

Section on Oil Spill Fund (I.B.7) describes compensation for damages resulting from oil spill.

18.92 The EIS has been revised to incorporate all units.

18.93 Location of 8 platforms are indicated in Table I.B.1.d-1. Mean Resource estimates are described in POCS Technical Paper No. 81-1. In addition, resources and impacts are evaluated for the Santa Barbara Channel, Inner Banks and Outer Banks.

18.94 Analysis Proposed Sale No 68 oil spill model does have the circulation information that is included in the "A Climatology and Oceanographic Analysis of the California Pacific Outer Continental Shelf Region", a report to BLM by NOAA.

Impacts on critical environments have been considered. However, impact discussions generally do not consider oil spill containment, use of dispersants and weathering of oil. If any of the above factors occur, a reduction in the described impacts could result.

18.95 The September 1980 recommendations made by the Pacific RTWG were considered in the writing of the DEIS and revisions to the document.

Issue 1 - Leasing History. The EIS has been revised to include more complete information as suggested by the RTWG. See Appendix F of the FEIS.

Issue 2 - Cost/Benefit-Risk/Benefit Analysis. As was noted in the 9/25/80 memorandum to the members of the RTWG, it has been Department policy that this analysis is not presented in the EIS. An analysis of the proposed action and alternatives to the action is provided to the Secretary prior to the decision.

Issue 3 - Local Impact Analysis Model. BLM funded an analysis of impacts of Proposed Sale No. 68 on public services in Santa Barbara and Ventura Counties. This analysis, prepared by Blaney-Dyett, has been published in April 1981 as POCS Technical Paper No. 81-4 and is available to the public.

Issue 4 - National and State Energy Needs. As was noted in the 9/25/80 memo to the RTWG, this issue is considered within the programmatic documents.

Issue 5 - Cumulative Impacts. Cumulative impacts were addressed as the RTWG recommended. These sections have been revised in many instances to provide more in depth discussions. See section IV.C.

18.96 Inherent in any policy, directive, or order is the understanding that it will be fully enforced as written. The USGS anticipates it will be well equipped and well staffed to carry out the required enforcement.

18.97 Section I.B.2 now includes a discussion of the provisions in the OCS Lands Act, as amended, which provide for Federal-State revenue sharing agreements resulting from production from joint pools obviating the need for State drainage sales.

18.98 The two transportation scenarios that are described in Section I.B.C, Projected Transportation and Markets, are conceptual transportation system. Scenario No. 1 includes transportation of crude oil by pipelines from the Santa Barbara Channel to the refineries in the Los Angeles Basin; Scenario No. 2, by barges. Exxon is planning to expand the development of the Santa Ynez Unit, which is located within the Santa Barbara Channel. They are investigating the possibility of transporting crude by pipeline, barges, or combination of pipelines and barges. Scenarios No. 1 and 2 are similar to Exxon's plans to transport crude from the Santa Ynez Unit.

18.99 The EIS has been revised to incorporate this information.

18.100 It is true that competition for berths is intense at many California ports. However, as explained in the EIS, it is expected that the oil and gas industry will use ports where conflicts with the fishing industry are unlikely for activities resulting from proposed Sale No. 68.

18.101 See response 18.48.

18.102 No revision. The peregrine falcon is not presently known to breed in the SCB. If the peregrine falcon recolonizes the SCB, the probability of the falcon being adversely impacted as a result of Proposed Sale No. 68 activity is very low. The peregrine falcon preys on flying birds. Birds heavily contaminated with oil will probably not be able to fly.

18.103 The EIS has been revised to address this subject.

18.104 The EIS has been revised as suggested. Also refer to
Sale Nos. 35 and 48 EIS cited earlier in the referenced
section.

JOHN SPELLMAN
Governor



DONALD W. MOOS
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504 • (206) 753-2800

August 13, 1981

John Lane
U.S. Department of Interior
Bureau of Land Management
Pacific OCS Office
1340 W. Sixth Street, Room 200
Los Angeles, CA 90017

Dear Mr. Lane:

Thank you for the opportunity to review the Draft Environmental Impact Statement on Proposed Lease Sale No. 68. The Washington Department of Ecology, in consultation with representatives of other state agencies, offers the following remarks:

Generally, the DEIS is well prepared and satisfies the majority of concerns regarding offshore exploration in the Southern California Bight. There are however, several deficiencies in the DEIS which the State of Washington would like to indicate.

First, the data provided on page 1, chapter 1 is entirely outdated and provides a distorted view of the current energy outlook. It should be acknowledged that petroleum conservation is occurring at a previously unanticipated rate. The report quotes the 1977 petroleum impact level at 7,724,000 barrels per day. By 1980, that figure declined to 6,622,000 and for the most current figure available, July 1981, imports stood at 4,737,000 barrels per day. For the first time in several years, the nation is actually facing a large crude oil surplus. Solar energy, as harnessed through photovoltaic cells, is credited with an operating efficiency of a mere 5-15%. However, the DEIS overlooks the thermal energy capability available in both active and passive solar systems. These forms of solar energy offer high efficiency at competitive costs, particularly in areas of bountiful insolation such as Southern California. The DEIS contends that the "OCS constitutes the last major frontier for domestic petroleum and natural gas exploration." This statement does not take into account the intense and renewed interest that the oil industry is developing for promising onshore areas, for example the Williston Basin, Overthrust Belt, and the National Petroleum Reserve-Alaska. Major discoveries are also predicted in the Eastern Overthrust, a region which until recently, has received little attention. In short, the OCS must be classified as only one of many possible energy sources. The DEIS should clearly reorganize that OCS petroleum and natural gas resources are finite, as well as non-renewable and therefore only offer a short-term solution to the nation's energy needs.

John Lane
U.S. Department of Interior
August 13, 1981
Page Two

Second, the discussion of coastal land use (chapter 4, page 107) provides estimates of the number of onshore and offshore facilities which will be necessary given the proposed lease plan. In regards to offshore platforms for exploration and production, the DEIS does not clarify whether or not new fabrication yards will be necessary to accommodate the proposal and if so, where they would most likely be located.

Finally, the DEIS should emphasize the importance of the tuna resource which abounds in the Southern California Bight. Although it was not mentioned, the tuna is a valuable commercial species for fisherman from other Pacific states, i.e. Oregon and Washington. Tuna are known to migrate as juveniles from the California Coast to the Pacific Northwest producing an average annual catch of 4,475,000 lbs. in Washington alone. Should offshore operations be conducted in an unsafe manner, the effects on tuna could cause serious economic hardship for commercial fishermen.

In summary, Washington supports the resource management concept of offshore leasing in coastal areas with known resource potential and existing infrastructure prior to leasing in higher risk frontier areas. As a matter of policy, Alternative 2, which allows for the protection of marine mammal and pelagic bird habitats in the Channel Islands Marine Sanctuary, should be given serious consideration. According to the DEIS, little hydrocarbon resource would be foregone, yet critical marine habitat would be preserved.

Sincerely,

Brian Walsh

Brian Walsh
Environmental Planner
Shorelands Division

BW:m

19.2

19.3

19.4

19.5

19.1

7-189

Responses to STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY

- 19.1 Section I.A has been revised using more current information. Also see Section III.B.9 concerning Alternative Energy.
- 19.2-3 It is noted in the EIS that most onshore facilities necessary to serve the activity anticipated by the proposal are already in place or will be developed as a result of preceding sales. The construction of new platform fabrication yards specifically for Proposed Sale No. 68 is not considered likely.
- Four new temporary fabrication yards could be constructed to fabricate pipeline onshore for pull type pipelaying operation. Probable sites for such operations are listed in Section IV.A.2.
- 19.4 The importance of tuna to commercial fishermen in California is apparent from Figures III.B.3.b-2 and III.B.3.b-3. Further discussion of the tuna resource is not included since no significant impacts to the tuna industry are anticipated (see Section IV.C.5).
- 19.5 Comment noted.



GENERAL COUNSEL OF THE
UNITED STATES DEPARTMENT OF COMMERCE
Washington, D C 20230

AUG 17 1981

NOAA COMMENTS ON THE DRAFT ENVIRONMENTAL
IMPACT STATEMENT FOR SOUTHERN CALIFORNIA
OCS OIL AND GAS LEASE SALE NO. 68

Mr. William E. Grant
Manager, Pacific Outer Continental Shelf Office
Bureau of Land Management
U.S. Department of the Interior
1340 West 6th Street
Los Angeles, California 90017

Dear Mr. Grant:

This is in reference to the draft environmental impact statement entitled, "Proposed 1982 Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving four copies of the final environmental impact statement.

Sincerely,

Robert T. Miki
Director of Regulatory Policy

Enclosure Memo from: National Oceanic and Atmospheric
Administration

cc: Vincent J. Hecker
Acting Director, Bureau of Land Management

The National Oceanic and Atmospheric Administration (NOAA) has reviewed the Draft Environmental Impact Statement (DEIS) for the Southern California OCS Lease Sale No. 68. Our comments on this document follow.

Alternatives to the Proposed Action

Alternative 2 Recommended. NOAA strongly supports Alternative 2 to the proposed sale. Alternative 2 would modify the sale to delete 13 complete and 24 partial tracts located within the designated Channel Islands National Marine Sanctuary. As noted in the DEIS, this deletion of tracts totals approximately 34,000 hectares (94,000 acres) which is only 8.4 percent of the total proposed offering and contains less than 3 percent of the total oil and gas resources estimated for the entire proposal.

Throughout the DEIS, a strong and valid case is presented for Alternative 2. Not only do the tracts within the Sanctuary represent a small amount of the total acreage and estimated resources, but deletion substantially lessens the potential impacts on the Sanctuary's resources. Pages 2-15 and 2-16 of the DEIS acknowledge that:

The adoption of Alternative 2 would result in a significant reduction in potential impacts to intertidal and subtidal benthic organisms, marine mammals and seabirds. Potential impacts to recreational and cultural resources would be reduced slightly . . . Deleting the tracts within 6 nautical miles of the islands will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. Also it would allow more time for oil spill clean-up and containment equipment to be mobilized. The oceanographic conditions off southern California are fairly good for handling an oil spill. With this additional time, the chances of effectively protecting sensitive marine resources are greatly increased. Specifically, the sensitive intertidal and nearshore subtidal resources and pinniped and seabird resources would be less likely to be directly contacted by the oil. Even if the oil did reach these resources, there would be less of it; it would be more weathered; and it would be less toxic.

Increasing the distance between OCS development and these resources would also reduce the vessel traffic, human intrusion and noise generated during exploration and development. Potential disruption of critical breeding and nesting activities for seabirds and pinnipeds would, therefore, be reduced. Also, the risk of damage from platforms and pipelines, to hard bottom subtidal areas, would be eliminated. Lastly, deleterious effects from drilling muds, cuttings and formation waters would be greatly reduced.

Potential impacts to recreational boating, fishing and diving within the Sanctuary will be reduced by adopting Alternative 2. Cultural resources will not be subjected to the jeopardy of exploration and development activities . . .

It is important to note that these unusual and valuable resources (intertidal, subtidal benthos, pinnipeds, seabirds, recreational and cultural) were major reasons the area was designated as a National Marine Sanctuary and a National Park. Adopting Alternative 2 (deleting tracts within the Sanctuary) would help maintain the characteristics and qualities that were prime reasons for designating the northern Channel Islands as a National Marine Sanctuary and a National Park.

The Sanctuary was designated on September 22, 1980, to protect the significant marine resources within 6 nautical miles of the five northern Channel Islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapas, and Santa Barbara). The final regulations for the Channel Islands National Marine Sanctuary were published on October 2, 1980 (45 FR 65198) and included prohibitions on oil and gas development on leases executed after the effective date of the regulations. On February 17, 1981, the President issued Executive Order 12291 directing Federal agencies to further suspend or postpone the effective dates of any pending "major" regulation to the extent permitted by law. In response to the President's Executive Order, NOAA suspended those portions of the regulations, which would directly or indirectly prohibit oil and gas development within the Sanctuary, until September 30, 1981 (46 FR 23924; April 29, 1981). During the suspension, NOAA is preparing a regulatory impact analysis to determine whether the prohibitions are "major" and to evaluate the costs and benefits of the prohibition on hydrocarbon activities. Until the regulatory impact analysis is prepared and the Sanctuary Programs Office has time to determine whether to reinstate the oil and gas prohibition, continue the suspension, or take some other alternative action, no additional leasing should take place within the Sanctuary.

Delete Alternative 5. Alternative 5 as described in the OEIS is an alternative that emphasizes that the Secretary of the Interior can choose any combination of tract selection options for this sale. This is not an alternative that can be evaluated in a reasonable manner. This is amply illustrated by the fact that description of the alternative in the summary preface of the OEIS is the only information provided about Alternative 5 in the whole document.

The National Environmental Policy Act (NEPA) regulations in §1502.14 set forth the standards that an alternative within an environmental impact statement must meet. Alternative 5 complies with none of the standards. NOAA recommends that Alternative 5 be deleted from the final environmental impact statement.

Stipulation

Biological Stipulation - The biological stipulation as described in the DEIS provides for site specific surveys to determine the existence of:

1. Very unusual, rare, or uncommon ecosystems or ecotones, or
2. A species of limited regional distribution that may be adversely affected by any lease operations.

The stipulation notes that the survey for special biological resources need not be limited to the above conditions. While the conditions may serve as a useful guide to the decisions of the Deputy Conservation Manager, NOAA believes they are unnecessarily restrictive and that decisions to invoke the provisions of the biological stipulation should not be predicated upon these restrictions.

NOAA recommends that the last line of the first paragraph end after the phrase "... special biological resource." The conditions listed above should then be deleted from the stipulation.

Specific Comments

Page iv

Delete the qualifier "to some extent" as marine mammals and sea birds are known to be vulnerable to impacts associated with OCS activities. This qualifier is also inconsistent with evaluations of impact elsewhere within the document (e.g. page 4-7b "in some cases, very severe impact").

Page 4-1

NOAA is concerned that while various estimates of the probability of an oil spill resulting from Lease Sale No. 68 activities are given, no information is given on the cumulative chances for a spill due to the combined activities of Lease Sale 68 and prior leases in this area. Such information would give an indication of the contribution of this sale to the overall potential for impacts to the marine resources of the region. A more objective analysis of the benefits (in oil produced) versus potential costs (damage to natural resources) would then be possible.

Page 1-17, g.

Throughout the document, the term "critical habitat" is used for the normal range and habitat occupied by a species. In order to avoid confusion with the legal term, Critical Habitat, as defined by the Endangered Species Act (ESA), we suggest using a term other than "critical" for describing habitat important to the various species discussed. Critical habitat has not been designated pursuant to Section 4 of the ESA for any marine species in the lease sale area.

20.7

Page 34, a.

Through the Biological Stipulation, we recommend that required biological surveys be designated to detect the presence of Vema hyalina. Making the results available for our use will assist in our evaluation of the distribution and status of this species.

20.8

Page 2-4, Paragraph 4

Delete "to some extent" as per above comment.

20.9

Page 3-47, 3. Fish and Fisheries

An additional source of site specific fishery information is: California Department of Fish and Game. 1980 - Atlas of California Coastal Marine Resources. 133p.

20.10

Page 3-51, Table III. 3.p.-1

The fisheries landings data presented can be updated for the Ports of San Diego and San Pedro/Terminal Island as follows:

Average Weight and Value 1977-1980*

Port	Weight (mill.Lbs.)	Value (Mill. \$)
San Pedro/Terminal Island	397.6	103.1
San Diego	162.0	71.6

20.11

*Source: Department of Commerce, April 1981. Fisheries of the United States, 1980. 132 p.

Page 3-60, Paragraph 4

The statement "smaller seals and sea lions fall prey to sharks and other pinnipeds as well" is confusing and incorrect. We know of no locally occurring pinniped which preys on another species of pinniped.

20.12

Page 3-66, Table III, B. 5-1

Vena hyalina has not been formally proposed for endangered status under the Endangered Species Act. The species has been nominated, the nomination is under review. If the authors of the FEIS wish to include nominated species within this table, they should also include the Guadalupe fur seal (Arctocephalus townsendi) for purposes of consistency. The present distribution of the Guadalupe fur seal includes Guadalupe Island (Mexico), San Nicolas Island, and San Miguel Island. Its nomination is under also review.

20.13

Page 3-70, Eelgrass Beds

Eelgrass beds also serve as nursery areas for several species of commercially and/or recreationally valuable fishes (personal communication Robert Hoffman, NMFS). Eelgrass is utilized as a food source by the endangered green sea turtle (Chelonia mydas) in portions of its range which include areas congruous with the boundaries of Lease Sale No. 68.

20.14

Page 3-74, 7 Proposed Marine Sanctuaries

The title of this section should be expanded to include proposed or existing estuarine sanctuaries. Currently Elkhorn Slough has been designated and the Tijuana Estuary (within the boundaries of Lease Sale No. 68) is being reviewed for designation.

20.15

Page 4-1

One of the areas most sensitive to spilled oil in the Southern California bight is the Pt. Bennett rookery at San Miguel Island. The discussion of the oil spill trajectory model does not specifically discuss this region. We recommend this area be evaluated and the predicated occurrences of an oil spill at this location be included in the FEIS.

20.16

Page 4-25

NOAA will transmit a report by Kooyman et al., 1976 which provides further information on the effects of oil on pinnipeds. We believe the physiology of pinnipeds and cetaceans is too different to allow for the extrapolation of the effects of oil on one group to the other. We recommend this discussion be deleted.

20.17

Pages 4-76 and 4-78

The subsections "Santa Barbara Area" and "Outer Banks Area" should note the presence of Guadalupe fur seals on San Miguel Island and San Nicolas Island respectively. We believe this species may be in the process of reoccupying its former range. We are concerned that impacts from OCS exploration and development may inhibit or prevent recolonization. We believe this concern should be discussed in the FEIS.

20.18

Page 4-76

The number of Northern fur seals utilizing San Miguel Island rookery sites in 1980 was probably in excess of 3,000 animals (George Antonelis, NMFS, National Marine Mammal Lab, personal communication). This more recent information should be included in the paragraph regarding the "Santa Barbara Area", instead of the information extrapolated from Dohl, et al., 1980.

20.19

20.1-2

Comments noted. The effective date of the referenced regulations was proposed for another extension on 9/8/81 (Volume 46, No. 173 of the Federal Register, page 44764) due to the fact the regulatory impact analysis was not expected to be completed by 9/30/81. The notice proposed that the regulations continue to be held in suspension until 3/30/82. At this writing (9/15/81), no action had been taken (i.e., no continuation had been issued) but it is expected the suspension will be continued as proposed.

20.3

Alternative 5 is referred to in several places in the DEIS. We agree that giving it a number could mislead some readers, so in the FEIS we refer to "Other Alternatives" without assigning a number. Since the Secretary of the Interior has the option to delete any tracts he chooses, and since this option has been exercised in the past, we feel it is important to indicate this possibility in the EIS.

20.4

This recommendation was discussed at the Departmental Manual 655.1 meeting on Proposed Sale No. 68 stipulations held October 5, 1981. This meeting was attended by representatives from local offices of Departmental agencies and a local NOAA representative. The consensus of those in attendance was that the two categories now in the stipulation should not be deleted but an additional category could be added. Final resolution of this recommendation will be made at a meeting with representatives of Departmental agencies at the national level prior to the sale.

20.5

"To some extent" is an excellent qualifier. There is no evidence to suggest OCS oil and gas development is detrimental to many marine mammal species, e.g., gray whale and elephant seal, but other species, e.g., sea otter, potentially could be severely impacted by OCS activities. However, Proposed Sale No. 68 is not expected to severely impact any species.

20.6

The cumulative impact sections contain analysis of the probability of a spill resulting from Proposed Sale No. 68 and existing potential spill sources.

Tables IV.A.1.a-1 through 4 present information on cumulative chances for a spill.

- 20.7 The EIS has been revised as appropriate.
- 20.8 The biological stipulation was invoked on every Sale No. 48 tract on the Santa Rosa-Cortes Ridge which contained depths within 100 to 500 m to check on Vema hyalina as per BLM's recommendation. Information is available upon request. BLM will carefully review the need for the Biological Stipulation on all tracts actually leased in Proposed Sale No. 68 and recommend invocation of the stipulation where appropriate.
- 20.9 See response 20.5.
- 20.10 Section III.B.3 has been revised to include this reference.
- 20.11 Table III.B.3 of the EIS has been revised to include this information.
- 20.12 Section III.B.4 of the EIS has been revised to clarify this point.
- 20.13 A discussion on the Guadalupe Fur Seal has been included in Section IV.C.7. Table IV.B.5 was also changed as suggested.
- 20.14 San Diego Bay, its eel grass beds, and endangered turtles are not predicted to be affected by Proposed Sale No. 68 activities. The EIS has been clarified.
- 20.15 The EIS has been revised as appropriate.
- 20.16 The EIS has been revised as suggested. Segments 41 and 42, Figure 14.A.1.2-3 and Table 14.A.1.a-1, represent San Miguel Island.
- 20.17 This paragraph begins with a statement that effects of oil on cetaceans are unknown and it continues on to state extrapolation is difficult. It seems clear conclusions made in this paragraph are drawn from limited information. But these conclusions are supported by best available information and basic anatomical similarities of the mammalian eye.
- 20.18 The Guadalupe Fur Seal is now mentioned in Outer Banks subsection as a visitor to the area.
- A discussion of Proposed Sale No. 68 activities causing an impact on the Guadalupe Fur Seal was not included in the FEIS as too many factors would have to materialize

for such an impact to occur. However, for your benefit, such an analysis is presented below.

Up to 4 male Guadalupe Fur Seals have been seen each year in the SCB since 1976. The presence of Guadalupe Fur Seals in the SCB may indicate a recolonization attempt although no females have been observed. The following sequence would be necessary for even a low impact on the Guadalupe Fur Seal: 1) Guadalupe Fur Seals continue to visit the SCB; 2) breeding begins; 3) a colony is established; 4) a spill resulting from Proposed Sale No. 68 occurs when the Guadalupe Fur Seals are present and strikes an area occupied by Guadalupe Fur Seals. This potential impact may or may not influence recolonization if it is actually occurring.

20.19

The DEIS states "approximately 4,000 are present". Your suggestion to include a more recent survey of "in excess of 3,000 animals" does not seem as precise as the former statements.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS WESTERN SPACE AND MISSILE CENTER (AFSC)
VANDENBERG AIR FORCE BASE, CALIFORNIA 93437

21 JUL 1981

Response to U.S. DEPARTMENT OF DEFENSE,
DEPARTMENT OF THE AIR FORCE

REPLY TO
ATTN OF SEY

SUBJECT Comments on Draft Environmental Impact Statement for Proposed
OCS Sale No. 68

TO Department of Interior
Bureau of Land Management
Pacific OCS Office
1340 W. Sixth Street, Room 20D
Los Angeles CA 90017

1. WSMC/SEY has completed a review of the subject Environmental Impact Statement (EIS) and offers the following comment:

"Military stipulations 1 and 2 should be included in the leases for the below listed tracts:

- a. Tracts 50, 51 and 55 northwest of San Miguel Island
- b. Tracts 189 through 194 in the San Nicolas basin
- c. Tracts 195 through 221 in the Santa Rosa Cortez Ridge South, and the Tanner/Cortez Banks vicinity"

2. Questions regarding this matter should be referred to WSMC/SEY, Mr Abbott, (805) 866-3602, Auto von 276-3602.

FOR THE COMMANDER

C. F. Wilhelm
CHARLES F. WILHELM, Colonel, USAF
Director of Safety

Cy to: AFSC/DE/TEUP
SD/DE/SE
SAMTO/DO/OOS
4392 AEROSG/OE
U. S. Army Corps of
Engineers (Mr Clarke)
PMTG (Code 320D-5)
Western Oil and Gas
Association (Mr Wright)
Dept of Interior/USGS
(Mr Ounaway)
State Lands Comm (Mr Willard)
NASA/Real Estate (Ms Haber)
NASA JSC Safety Office
(Mr Rod Rose)
NASA/KSC Shuttle Resident
Office (Mr P. Murphy)

21.

See response 66.

21.

7-196



DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2711
LOS ANGELES, CALIFORNIA 90053

Response to U.S. DEPARTMENT OF DEFENSE,
DEPARTMENT OF THE ARMY

SPLED-E

7 July 1981

22.

Comment noted.

Manager
Pacific OCS Office
Bureau of Land Management
1340 West 6th Street
Los Angeles, California 90017

Dear Sir:

This is in response to a letter from your office which requested review and comments on the Draft Environmental Impact Statement for the proposed Outer Continental Shelf Oil and Gas Lease Sale (OCS Sale No. 68), Offshore Southern California.


The proposed plan does not conflict with existing or authorized plans of the Corps of Engineers. We have no comments on the DEIS.

In the event that fulfillment of the proposed plan would infringe upon wetlands or waters of the United States, construction permits would be required from the Corps of Engineers. We suggest that you contact our Navigation Branch at telephone (213) 688-5606 regarding requirements for filing permit applications at your earliest convenience in order to expedite the permitting process.

22.

Thank you for the opportunity to review and comment on this document.

Sincerely,


NORMAN ARNO
Chief, Engineering Division

7-197



United States Department of the Interior

BUREAU OF MINES
2401 E STREET, NW.
WASHINGTON, D.C. 20241

August 5, 1981

Memorandum

To: Manager, Pacific OCS Office, Bureau of Land Management
1340 West 6th Street, Los Angeles, California 90017

From: Director, Bureau of Mines

Subject: Draft environmental impact statement for proposed Outer
Continental Shelf Oil and Gas Lease Sale No. 68

Thank you for the opportunity to review this generally well-written draft statement for the proposed 1982 oil and gas lease sale No. 68.

Known or potential offshore mineral resources that could be affected by the proposed action are: phosphorite, manganese-iron nodules, barite, glauconite, sand and gravel, shell, and calcium carbonate sands, as well as beach and offshore placer deposits containing a variety of valuable minerals. In addition to phosphate, the phosphorite deposits contain important byproduct minerals of uranium, vanadium, scandium, and rare earths (lanthanides and ytterbium). The manganese-iron nodules also contain byproduct copper, nickel, and cobalt.

The draft includes a short discussion on known locations and quantities of sand and gravel, calcium carbonate sands, shell, and phosphorite deposits; however, it fails to mention other known or potential sea floor mineral resources. We suggest that a discussion of both beneficial and adverse anticipated impacts on nonpetroleum mineral resources be included in Chapter IV, "Environmental Consequences."

DEPU: Director

H. P. Euser

Response to U.S. DEPARTMENT OF THE INTERIOR,
BUREAU OF MINES

23.

The FEIS has been revised to reference the Sale No. 35 FEIS. A more complete discussion of minerals within the Bight is contained in that document.

23.



IN REPLY REFER TO
A18(SAMO)

United States Department of the Interior

NATIONAL PARK SERVICE
SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA
22900 Ventura Boulevard, Suite 140
Woodland Hills, California 91364

AUG 11 1981

John Wayne
Environmental Assessment Manager
Bureau of Land Management
Pacific Outer Continental Shelf Office
1340 West 6th Street, Room 200
Los Angeles, CA 90017

Dear Mr. Wayne:

On July 21, 1981, the Santa Monica Mountains National Recreation Area Advisory Commission requested that I forward a copy of their resolution regarding off-shore oil leasing in the Santa Monica Bay. The Commission feels that OCS sale number 68 will adversely affect the Point Dume area and recommends that the lease not be granted.

Sincerely yours,

Robert S. Chandler
Superintendent
Santa Monica Mountains National Recreation Area

Enclosure



IN REPLY REFER TO

United States Department of the Interior

NATIONAL PARK SERVICE
SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA
22900 Ventura Boulevard, Suite 140
Woodland Hills, California 91364

SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA ADVISORY COMMISSION

AUG 10 1981

Robert S. Chandler, Superintendent
Santa Monica Mountains National Recreation Area
22900 Ventura Boulevard, Suite 140
Woodland Hills, CA 91364

Dear Superintendent Chandler:

On July 21, 1981 the Santa Monica Mountains National Recreation Area Advisory Commission requested that I forward to the Bureau of Land Management our prior resolution regarding off-shore oil leasing. The Bureau of Land Management has recently held public hearings on off-shore oil lease number 68 in Santa Monica Bay. By forwarding our previous resolution, we wish to recommend against granting oil leases in the area due to the close proximity to Point Dume.

Please forward our letter and resolution to the Bureau of Land Management. Thank you.

Sincerely,

Norman P. Miller
Chairman
Santa Monica Mountains National
Recreation Area Advisory Commission

Enclosure



United States Department of the Interior

NATIONAL PARK SERVICE
SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA
22900 Ventura Boulevard, Suite 140
Woodland Hills, California 91364

IN REPLY REFER TO

SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA ADVISORY COMMISSION

RESOLUTION 01-80

RECOMMENDATION FOR REMOVAL OF OFF-SHORE OIL LEASE SITES

FROM SANTA MONICA BAY

WHEREAS the Santa Monica Mountains National Recreation Area Advisory Commission finds that the Santa Monica Bay is a major esthetic and ecological resource which is of fundamental importance to the Santa Monica Mountains National Recreation Area, and

WHEREAS this Advisory Commission finds that the effects of oil drilling in the Santa Monica Bay would seriously and adversely affect the Bay and the National Recreation Area, and

WHEREAS this Advisory Commission, pursuant to Public Law 95-625, has the role of overseeing the development of the Santa Monica Mountains National Recreation Area, and

THEREFORE BE IT RESOLVED that the Advisory Commission recommends that the Secretary of the Interior remove the Santa Monica Bay tracts from consideration for future drilling, and

THEREFORE BE IT FURTHER RESOLVED that the National Park Service take every action within its power to prevent drilling or the sale of oil leases in the Santa Monica Bay.


ADOPTED by the Santa Monica Mountains National
Recreation Area Advisory Commission on

April 14, 1980 .

AYES Sarah Dixon, Henry David Gray, Mary C. Hernandez, Michael Leveté,
Norman P. Miller, Susan B. Nelson, Carey Peck, Marilyn Whaley Winters

NOES None

ABSENT Marvin Braude



Norman P. Miller
Chairman
Santa Monica Mountains National
Recreation Area Advisory Commission

Response to U.S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE,
SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA

24. Comment noted. Alternative 4 addresses deletion of the tracts outside Santa Monica Bay. Point Dume is an isolated rocky intertidal area and is addressed in Section IV.C.4 of the EIS.



United States Department of the Interior

NATIONAL PARK SERVICE

WESTERN REGION

450 GOLDEN GATE AVENUE, BOX 36063
SAN FRANCISCO, CALIFORNIA 94102

IN REPLY REFER TO:
L 3025

(WR) RNE

August 12, 1981

Memorandum

To: Manager, Pacific OCS Office, Bureau of Land Management

From: ~~ACTING~~ Regional Director, Western Region

Subject: National Park Service Comments, Draft Environmental Impact Statement for Proposed Outer Continental Shelf Oil and Gas Lease Sale Number 68 (DES 81/22)

The National Park Service has commented earlier on OSC Lease Sale No. 68 as reflected in the attached May 6, 1980, memorandum from the Director, National Park Service to the Director, Bureau of Land Management. In this memorandum, we urged that in the preliminary tract selection, at least twenty Santa Barbara Channel tracts be deleted from sale number 68.

We wish to reiterate our concern for the protection of the resources contained in Channel Islands National Park, particularly the highly vulnerable endangered species of birds and animals.

As our previous memorandum states, the Channel Islands have been recognized by UNESCO as an International Biosphere Reserve. In addition, the designation of the Channel Islands National Marine Sanctuary has given added recognition to the significance of the areas surrounding and included in Channel Islands National Park.

Alternative 2 in the DES would delete essentially the same tracts we have previously requested be deleted. We endorse the evaluation on page 2-15 that "(t)he adoption of Alternative 2 would result in a significant reduction in potential impacts to intertidal and subtidal benthic organisms, marine mammals and seabirds." (Emphasis added.)

As you know, the National Park Service is mandated in P.L. 96-199 to protect the nationally significant natural, scenic, wildlife, marine, ecological, archeological, cultural and scientific resources in the Channel Islands National Park. For this reason we urge that Alternative 2 be selected.

Thank you for considering this recommendation.

Enclosure

cc: Director (542) BLN



United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

Memorandum

MAY 06 1980

To: Director, Bureau of Land Management

Through: Assistant Secretary for Fish and Wildlife and Parks (Sgd.) James R. Webb

From: ~~ACTING~~ Deputy Director, National Park Service

Subject: Preliminary Tract Selection for Southern California OCS Oil Lease Sale Number 68

Channel Islands National Park in California was established 5 March 1980 (Public Law 96-199) to protect the nationally significant natural, scenic, wildlife, marine, ecological, archeological, cultural, and scientific values of six Channel Islands (Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Prince) including the rocks, islets, submerged lands, and waters within one nautical mile (1nm) of each island. The marine and island ecosystems of this newly established, 250,000 acre national park long have been regarded by scientists throughout the world as of considerable scientific value. Consequently, in 1976 UNESCO formally recognized these islands and their surrounding waters as an International Biosphere Reserve where scientists can study relatively unimpaired natural environments for ecological comparisons with other sea-land interfaces. In essence these six islands and their surrounding waters serve as an international standard of ecological and scientific importance, the ecological integrity of which Congress has instructed be protected and preserved for posterity. Specifically, the Park's enabling legislation calls for limited entry and low intensity use of the Park to maintain human disturbances at a minimum.

In keeping with this Congressional policy, the National Park Service recommended to NOAA's Office of Coastal Zone Management an 8 nautical mile boundary around the islands for their proposed Channel Island National Marine Sanctuary. Similarly, we now urge that an 8 nautical mile buffer be established around the perimeter of the park to assure adequate protection of the park's resources, particularly the kelp beds and other highly productive adjacent waters utilized as major foraging areas by both resident and pelagic marine birds and mammals.

7-201

25.

More specifically, we urge that at least the following twenty Santa Barbara Channel tracts be deleted from sale number 68:

42N,60W	43N,60W	44N,59W	45N,60W	47N,84W	48N,84W
42N,59W	43N,59W	44N,58W	45N,59W	47N,81W	48N,83W
42N,58W	43N,58W		45N,58W	47N,79W	48N,82W
				4S	48N,81W
					48N,80W
					48N,79W

The elimination of these tracts from the sale will reduce the ambient levels of general disturbance in essential foraging and resting areas in the vicinity of the islands. The omission of these tracts also will increase the probability of achieving adequate oil-clean-up measures in areas of extreme biologic sensitivity in the event of a catastrophic oil accident.

Thank you for your consideration of our recommendations.

cc: ^{FW}Director, WR
 Superintendent, CHRIS
 MAR Coordinator, USDI
 001 - Central File
 482 - Ro
 W FNP: DWeisbroad;lr;5/5/80;523-5139

(SGD) DANIEL J. TOBIN, JR.

Response to U.S. DEPARTMENT OF THE INTERIOR,
 NATIONAL PARK SERVICE, WESTERN REGION

25.

The recommended alternative, deletion of tracts in the Channel Islands National Marine Sanctuary, is addressed in Section II.B.2. Comments raised in your May 6, 1980 letter also have been reviewed and incorporated into the EIS, as appropriate. BLM has considered an alternative to delete tracts within 8 nm of the Channel Islands National Park and decided that there is not sufficient justification for including this alternative in the EIS. However, as has occurred in previous sales, the Secretary of the Interior may choose to delete any combination of tracts he deems appropriate.

5 AUG 1981



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS
U.S. COAST GUARD (G-1'S-1)
WASHINGTON D.C. 20593
PHONE: (202) 426-3300

16477.4b0029

5 AUG 1981

Mr. Vincent J. Hecker
Acting Director
United States Department of
the Interior (542)
Bureau of Land Management
Washington, D.C. 20240

Dear Mr. Hecker:

Your letter of May 29, 1981 requested Coast Guard comments on the Draft Environmental Impact Statement (DEIS) on the proposed 1981 Outer Continental Shelf (OCS) Oil Gas Lease Sale No. 68. The DEIS has been reviewed by personnel at Coast Guard Headquarters and the appropriate Coast Guard District. Section III.C.7(a) outlines the proposed Port Access Route (PAR) recommendations of the Eleventh Coast Guard District and incorporates the final PAR recommendations of the district commander.

a. It is recommended that the western approaches to the Los Angeles/Long Beach Precautionary Area be reconfigured to relieve vessel routing conflicts in and near the Los Angeles Pilot Boarding Area. This would be accomplished by shifting the northbound lane two nautical miles south, shifting the southbound lane one mile south and reducing a portion of the separation zone from two miles to one mile. The Precautionary Area would also be reconfigured as depicted in Enclosure (1). This recommended change would affect a portion of proposed tracts 34N-42W(159), 34N-40W(160) and 34N-39W(168). It would also have the affect of removing the majority of tract 35N-36W(167), part of 35N-37W(166) and all of 36N-36W(164) from the Precautionary Area.

. It is recommended that the southbound lane of the Gulf of Santa Catalina Traffic Separation Scheme (GSCTSS) be shifted one and one-half nautical miles to the west to allow an offshore platform to be installed in the existing southbound lane. This change is contingent upon the results of exploratory drilling activities now scheduled for September 1981. This proposed shift would affect a portion of proposed tracts 33N-38W(171), 32N-37W(173), 31N-38W(180), 31N-37W(181) and 30N-37W(186).

c. It is recommended that the western end of the Santa Barbara Channel Traffic Separation Scheme (SBCTSS) be extended seaward and that a Precautionary Area be established approximately twenty miles west of Point Conception to act as junction for vessels entering and leaving the SBCTSS. This Precautionary Area would be a circle of four nautical mile radius centered at position 34 27'18"N, 121 02'30"W., just west of proposed tracts 55N-89W(1) and 54N-89W(5). An additional TSS would extend northward from this Precautionary Area to join with the port access route recommended by the Twelfth Coast Guard District seaward of the Santa Maria Basin of Lease Sale No. 53.

d. It is recommended that the eastern end of the Santa Barbara Channel Traffic Separation Scheme, northeast of Anacapa Island, be shifted one-half nautical mile to the south to allow for a platform to be installed to develop the Sockeye Field. This minor shift would be an angular one pivoted on the center of the Precautionary Area discussed above. This proposed change would have minimal effect on proposed Sale 68 tracts. All the above concerns are depicted in Enclosure (2).

During the district's PAR study it was determined that management measures be implemented to govern oil and gas activities in the vicinity of designated Port Access Routes. As a result, exploratory drilling operations would not be permitted in traffic lanes, precautionary areas or safety fairways. However, exploratory drilling would be allowed within 500 meters of a traffic lane if no other obstructions, either permanent or temporary, were present on the opposite side of the lane for a transverse distance of the lane width plus 1000 meters and for a distance of two miles in each direction along the axis of the lane. In addition, permanent structures would not be permitted in precautionary areas, safety fairways or in or within 500 meters of a traffic lane. Permanent structures would be allowed in the separation zones subject to case by case review.

Further mitigation measures were also recommended for exploratory operations within 500 meters of a traffic lane. Those included a minimum 90 day advance notification for Notice to Mariner purposes and the use of radar and radio communications by the drilling unit.

Our greatest major concern is, and has been, the potential for inclusion of tracts in the Precautionary Area (PA) at the junction of the two Traffic Separation Scheme's (TSS) and the entrances to LA/LB harbors. Such tracts were deleted from recent Lease Sale No.48. Tracts however have reappeared in the proposed sale 68; namely 164, 165, 167 and a portion of 169. The recommended reconfiguration of the PA was discussed earlier in paragraph two of this letter would continue to include all of tract 165, portions of 166, 167, and 169, and would add portions of 160 and 168. The problem of tracts in the PA was brought to the attention of BLM in Enclosures (4), (5) and (6). Previously, the Coast Guard formally requested that BLM delete two tracts from the precautionary area at the entrance of LA/LB (in comments on Lease Sale 73), Enclosures (7) and (8) refers to this past request.

Thus, activities on the aforesaid tracts would be limited. Tract 35N-38W (165) however is entirely within the PA, both existing and as recommended for reconfiguration, and should therefore be deleted from this and future proposed sales.

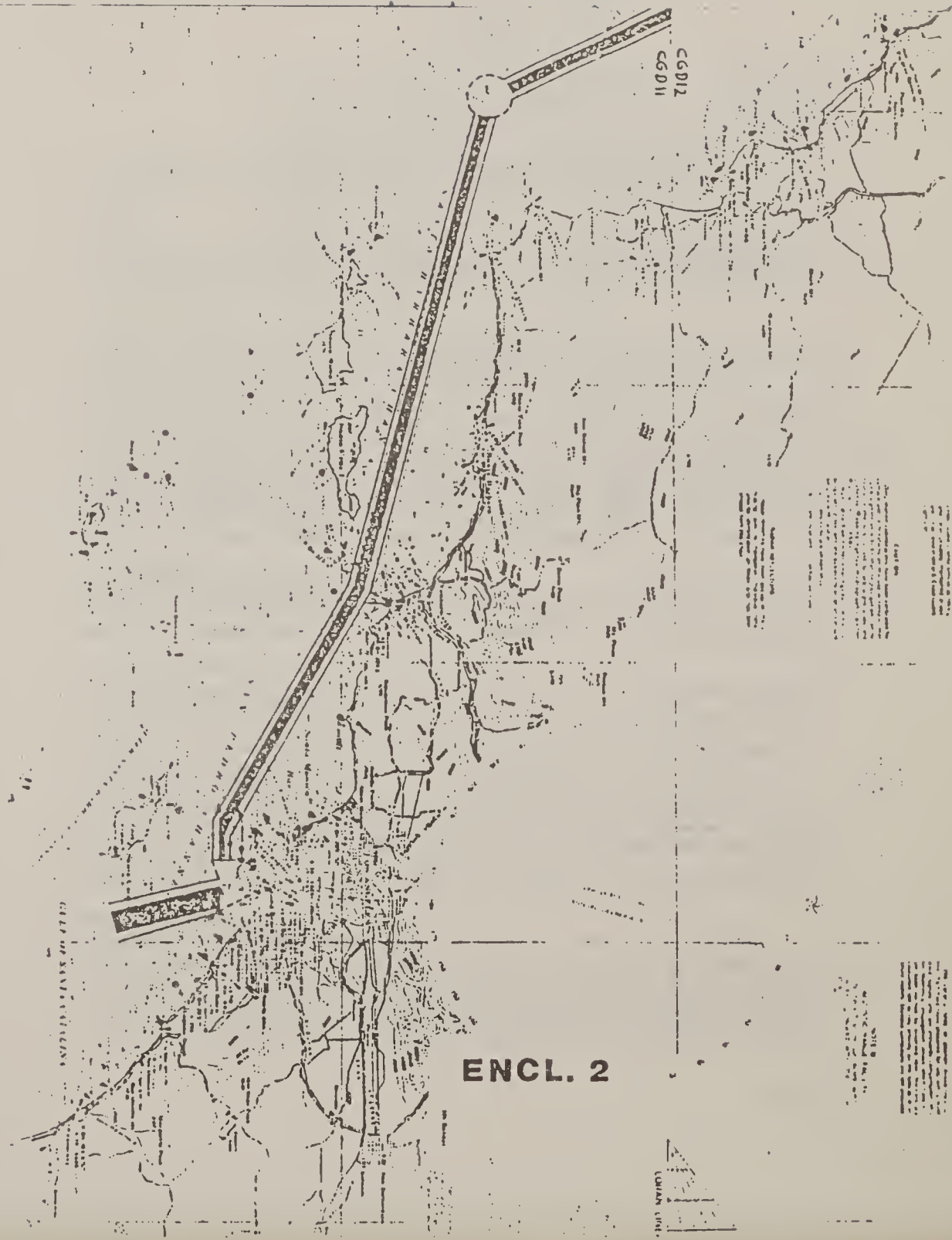
The opportunity to provide comments on the proposed OCS lease sale is appreciated. If further assistance is needed feel free to contact us.

Sincerely,

W.E. Caldwell

W. E. CALDWELL
Rear Admiral, U. S. Coast Guard
Chief, Office of Marine
Environment and Systems

Enclosures





MAILING ADDRESS
COMMANDER (M-OC5)
ELEVENTH COAST GUARD DISTRICT
UNION BANE BLDG.
400 OCEANGATE
LONG BEACH, CA. 90822
16475/30

FEB 22 1960

Manager, Pacific OCS Office
Bureau of Land Management
1340 West 6th Street, Room 200
Los Angeles, CA 90017

Ref: Comments on Leasing on the Outer
Continental Shelf - Southern California
Proposed UCS Lease Sale No. 68

Dear Mr. Grant:

This is in response to the Call for Nominations and Comments on Areas for Oil and Gas Leasing for Tentative Sale No. 68 published in the Federal Register of December 28, 1979.

The U. S. Coast Guard again requests the deletion of potential tracts and portions of tracts from within the established Traffic Separation Scheme (TSS) Precautionary Area at the entrances to Los Angeles, Long Beach and Anaheim Bay Harbors.

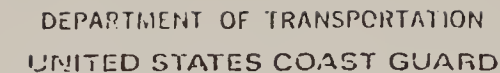
Tracts identified on the Call Area Map for Sale No. 68 as 35N - 38W, 35N - 39W, and 36N - 36W are completely within this Precautionary Area. Most of tract 35N - 36W and portions of tracts 34N - 36W, 34N - 39W, 34N - 40W and 35N - 40W are also in it.

The Call Area Map for Sale 68 shows potential tracts to the west of those offered in Sale 48 off Point Conception. In the event additional seaward tracts are offered in Sale 68 in the vicinity of grids 53N - 55N/88W - 90W, the Santa Barbara Channel TSS may have to be extended and made compatible with routing measures associated with the tracts of proposed Sale 53. The chartlet attached to Enclosure (1) illustrates this.

The Gulf of Santa Catalina TSS was not extended as the result of Sale 48. In the event tracts are offered in Sale 68 that would obstruct the southern end of this TSS, its extension may also be necessary.

As you are aware, the Eleventh Coast Guard District is currently engaged in the Port Access Route Study (PARS) required by Section 2, Sec. 4(c) and Sec. 5 of the Port and Tanker Safety Act of 1978. It can be anticipated that the study will result in the designation of Port Access Routes and establishment of rules of their use and activities therein, thus affecting OCS lease activities after 16 April 1979 as indicated in the Federal Register of that date. The

ENCLOSURE(3)



Mr. Frank Gregg
Director
Bureau of Land Management
Washington, D. C. 20240

Dear Mr Gregg:

Recently my staff had the opportunity to review the tract selection recommendation for lease sale 68, Southern, California, which was performed by the Pacific Outer Continental Shelf (OCS) Office, Bureau of Land Management. We are particularly concerned about five tracts which lie entirely or partly within the Precautionary Area in the approaches to Long Beach and San Pedro. Generally, to have an obstruction, fixed or temporary, within a precautionary area is unacceptable. Priority one tract 35N 38W, priority two tract 35N 37W and that part of tract 36N 36W beyond the three mile limit, and priority three tract 35N 39W lie entirely within the Precautionary Area; it is recommended that they be deleted from the tract selection. Priority two tract 35N 36W is partly within the Precautionary Area. Due to its location and the peculiar geography of the port approaches, some obstructions might be acceptable within this tract. If leased, approval for obstructions on this tract would have to be considered on a case by case basis.

Currently the Coast Guard is conducting a study to determine the potential traffic density and the need for safe access routes in accordance with the Ports and Waterways Safety Act (PWSA) (P.L. 95-474; 92 Stat. 1473). The study will be completed for the area of lease sale 68 by late this year. This may result in modification to the present traffic separation schemes in the approaches to Los Angeles - Long Beach and changes to the agreements currently in effect with the Army Corps of Engineers concerning the location of oil exploitation platforms in the vicinity of the existing traffic separation schemes and the traditional routes leading to these schemes. It is expected that the existing agreements will remain in effect until such ships' routing measures as might be developed by the current study are implemented. The Eleventh Coast Guard District staff, which is conducting the study in that area, is in regular contact with your Pacific OCS Office concerning these matters.

Your cooperation in maintaining navigational safety while maximizing the development of our offshore resources is greatly appreciated.

Sincerely,

J B Hayes

J. B. HAYES
Admiral, U. S. Coast Guard
Commandant



It's a law we
can live with

[illegible]

RECEIVED

APR 30 1980

M
11th Coast Guard District
Long Beach, CA 90822

ENCLOSURE(4)

7-205

(m-ocs)
16475/30
FEB 22 1980

area of Tentative Sale No. 68, like Sale No. 48, is within this PAR study area. Enclosure (1) discusses its status further.

Sincerely,

R. G. MOORE
CHIEF OF STAFF

Encl: (1) CCGDELEVEN(dj) letter 16650 of 20 November 1979

Copy to:
Director, Bureau of Land Management, ATTN: 540 Washington, D.C.
Conservation Manager, U. S. Geological Survey, Los Angeles



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS
COMMANDER (E)
ELEVENTH COAST GUARD DISTRICT
UNION BANK BLDG.
400 OCEANGATE
LONG BEACH, CA 90822
16475/30
13 March 1980

Mr. Keith Shone
Bureau of Land Management
Pacific OCS Office
1340 West 6th Street, Room 200
Los Angeles, CA 90017

Dear Mr. Shone:

This in regard to our telephone conversation today concerning BLM's receipt of nominations for tracts within the Precautionary Area at the entrances to Los Angeles-Long Beach-Anaheim Bay Harbors in response to the Call for Nominations and Comments for proposed OCS Lease Sale No. 68.

Copies of two letters that expressed Coast Guard concerns and objections to the leasing of tracts and/or portions of tracts within the established Traffic Separation Scheme (TSS) Precautionary Area (PA) are attached for your information.

Enclosure (1) was in response to the Sale 68 Call, and identifies tracts that are completely or partially within the PA.

Enclosure (2) was in response to preliminary information on Sale 48 that indicated three tracts would be in the PA. Subsequent review indicated that small portions of adjacent tracts were also in the PA. This latter point was covered in our comments on the Draft EIS for Sale 48.

Sincerely,

D. M. TAUB
Captain, U. S. Coast Guard
Chief, Marine Safety Division
Eleventh Coast Guard District
By direction of the District Commander

Encl (1) CCGDELEVEN(m-ocs) ltr 16475/30 of FEB 22, 1980
(2) CCGDELEVEN(mep) ltr 16475 of MAR 3 1978

ENCLOSURE(5)



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

RECEIVED
OFFICE (mep)
ELEVENTH COAST GUARD DISTRICT
THIRTH BARR BUILDING
400 OCEAN LANE
LONG BEACH, CALIF. 90801
Phone: (213) 590-2301

16475

MAR 3 1978

U. S. Department of the Interior
Bureau of Land Management
Attn: Mr. Grant
Pacific OCS Office
300 North Los Angeles Street
Los Angeles, California 90012

Dear Mr. Grant:

A matter of grave concern has come to my attention in the course of my staff's review of your agency's Preliminary Draft Environmental Statement (DES) for Proposed OCS Sale No. 48.

This sale would include three additional tracts located inside of the Traffic Separation Scheme (TSS) Precautionary Area at the entrances to Los Angeles, Long Beach and Anaheim Bay Harbors. Specifically; one is located directly across the termination of the eastbound traffic lane of the Santa Barbara Channel TSS, the next is a continuation of this and is also across the entrance of the southbound traffic lane of the Gulf of Santa Catalina TSS, and the third is across the termination of the northbound traffic lane of the Gulf of Santa Catalina TSS and covers much of the approach to Naval Weapons Station Seal Beach in Anaheim Bay.

IMCO Resolution A. 340(IX) titled "Recommendation on Establishment of Fairways Through Off-Shore Exploration Areas" was adopted on 12 November 1975 and addresses both fairways and traffic separation schemes. It treats the approaches and the terminals of routing schemes in the same manner as traffic lanes. Platforms and similar structures are not to be established therein.

It is noted that there already is one tract (Shell Oil Company's OCS Parcel 0293, Tract 247) inside of the Precautionary Area. This tract is across the end of the separation zone of the Gulf of Santa Catalina TSS and is partially across its two traffic lanes. Admiral Steele's letter of 2 June 1975 to you addressed OCS activities in the Precautionary Area (then called zone) in the same vein as in traffic lanes and that vessels could not engage in drilling inside of the Precautionary Area (zone) without the express permission of the Coast Guard District Commander.

MAR 3 1978

(mep)
16475

Again, the three proposed tracts in OCS Sale No. 48 are in worst possible locations, whereas the existing tract though highly objectionable has a lesser negative impact upon the TSS Precautionary Area.

Further, it is understood that the oil found by Shell Oil Company in OCS Parcel 0300 (Tract 261) under the TSS just south of the Precautionary Area is too viscous to permit exploitation by subsea completion methods. Hence, it is perceived that any oil that might be under the adjacent Precautionary Area would pose the same problem. It is most difficult to conceive permitting structures in these new tracts.

Therefore, it is strongly recommended that the three proposed tracts under discussion here be eliminated from OCS Sale No. 48.

Sincerely,


R. I. PRICE

ENCLOSURE (6)

Mr. E. L. Haste
Acting Director
Bureau of Land Management
Washington, D. C. 20240

Dear Mr. Haste:

Recently my staff had the opportunity to review the tract selection recommendation for lease 73, Southern California, which was performed by the Pacific Outer Continental Shelf (OCS) Office, Bureau of Land Management. We are particularly concerned about six tracts which lie entirely or partly within the Precautionary Area in the approaches to Long Beach and San Pedro (Map No. 6 C). Generally, to have an obstruction, fixed or temporary, within a precautionary area is not permitted. Priority two tract 35N 37W, and priority three tracts 36N 36W, 35N 39W, and 35N 38W lie entirely within the Precautionary Area; it is recommended that they be deleted from the tract selection. Priority three tracts 35N 36W and 35N 35W are partly within the Precautionary Area. Due to their location and the peculiar geography of the port approaches, some obstructions might be acceptable within these tracts. If leased, approval for obstructions on these tracts would have to be considered on a case by case basis.

Currently the Coast Guard is conducting a study to determine the potential traffic density and the need for safe access routes in accordance with the Ports and Waterways Safety Act (PWSA) (P.L. 95-474; 92 Stat, 1473). Although we have experienced considerable delay, the study will be completed for the area of lease sale 73 by late this year. This may result in modification to the present traffic separation schemes in the approaches to Los Angeles - Long Beach and changes to the agreements currently in effect with the Army Corps of Engineers concerning the location of oil exploitation platforms in the vicinity of the existing traffic separation schemes and the traditional routes leading to these schemes. It is expected that the existing agreements will remain in effect until such ships' routing measures as might be developed by the current study are implemented. The Eleventh Coast Guard District staff, which is conducting the study in that area, is in regular contact with your Pacific OCS Office concerning these matters.

ENCLOSURE(1)

Subj: Ltr to Mr. Haste concerning lease 73

Apr 1961

Your cooperation in maintaining navigational safety while maximizing the development of our offshore resources is greatly appreciated.

Sincerely,

V. L. C. 17.111
Vice Admiral, U.S. Coast Guard
Chief, Office of Marine
Environmental Systems

Copy: (1) Commander, Eleventh Coast Guard District (dca)
(2) Commander, Pacific Area, U.S. Coast Guard (P)
(3) Commander, Pacific Area, U.S. Coast Guard (Pd)

(Reference charts: United States 5101, 5142, 5147 and 5148)

Description of the traffic separation scheme

The traffic separation scheme in the Approaches to Los Angeles - Long Beach consists of two parts:

Part I:

Western approach

(a) A separation zone, two miles wide, is centred upon the following geographical positions:

- (1) 33°39'.7 N., 118°17'.6 W.
- (2) 33°39'.7 N., 118°27'.3 W.
- (3) 33°44'.1 N., 118°36'.3 W.

(b) A traffic lane, one mile wide, is established on each side of the separation zone.

The main traffic directions are:
090 — 270° and
120 — 300°.

Part II:

Southern approach

(a) A separation zone, two miles wide, is centred upon the following geographical positions:

- (4) 33°37'.7 N., 118°08'.9 W.
- (5) 33°19'.7 N., 118°03'.4 W.

(b) A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

- (6) 33°37'.7 N., 118°11'.3 W.
- (7) 33°19'.1 N., 118°06'.3 W.

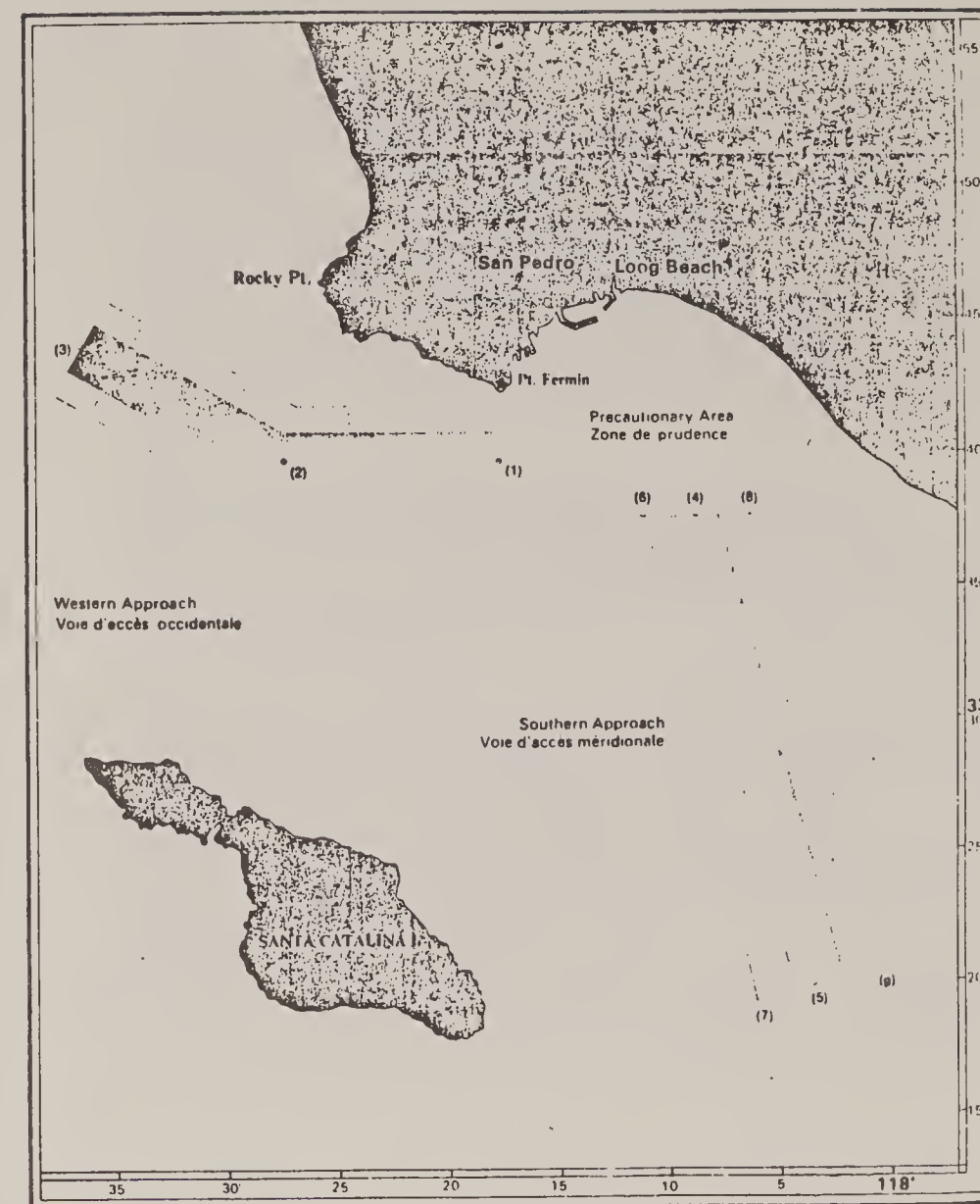
(c) A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

- (8) 33°37'.7 N., 118°06'.5 W.
- (9) 33°20'.3 N., 118°00'.5 W.

The main traffic directions are:
167° and 345°.

Precautionary area

The Los Angeles - Long Beach precautionary area consists of the water area enclosed by a line connecting Point Fernin Light at 33°42'.3 N., 118°17'.6 W. to 33°37'.7 N., 118°05'.4 W., thence to the shoreline at 33°41'.7 N., 118°02'.8 W.



IN THE APPROACHES TO LOS ANGELES - LONG BEACH
AUX ABORDS DE LOS ANGELES - LONG BEACH

ENCLOSURE (8)

Response to U.S. DEPARTMENT OF TRANSPORTATION,
U.S. COAST GUARD

26.1-7 The EIS has been revised to include the PAR recommenda-
 tion from the Coast Guard Headquarters.

The Transportation Visual has been changed to reflect
the PAR schemes provided in the comment.

26.8 In response to the USCG's recommendation to delete
 Tract 165, we have included Alternative 5 (see Section
 II.B.5) in the EIS.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 21 1981

OFFICE OF THE
ADMINISTRATOR

Mr. Robert Burford
Director
Bureau of Land Management
Washington, D.C. 20240

Dear Mr. Burford:

The Environmental Protection Agency (EPA) in accordance with its responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act has reviewed the draft environmental impact statement (DEIS) for the proposed Outer Continental Shelf (OCS) Oil and Gas Lease Sale #68 offshore Southern California.

Our comments on the DEIS relate to potential water and air quality impacts associated with this sale. We are enclosing detailed comments for your consideration in preparing the final EIS for this proposed sale.

Thank you for the opportunity to comment on this draft EIS for proposed OCS Sale #68. If you have any questions, please feel free to contact me or William Dickerson of my staff at (202) 755-0770.

Sincerely yours,

William N. Hedeman, Jr.

William N. Hedeman, Jr.
Director
Office of Federal Activities

Enclosure

EPA's Detailed Comments on the DEIS
for Proposed OCS Lease Sale #68
Offshore Southern California

WATER QUALITY

1. As pointed out in the DEIS the six mile boundary area around the Channel Islands is a Federally designated sanctuary. In addition, the California Ocean Plan, approved by the Environmental Protection Agency (EPA) under Section 303(c) of the Clean Water Act, designates portions of these areas as Areas of Special Biological Significance (ASBS). To provide adequate protection, we believe that additional mitigation measures may be necessary to minimize the adverse impacts of offshore operations on these sensitive marine areas. For example, it may be appropriate that to the extent possible, those activities which have a higher likelihood of resulting in pollution incidents or environmental harm should be planned to occur at times when the risk of environmental damage would be minimized.

27.1

Alternative 2 would modify the Sale by deleting tracts in the Channel Islands National Marine Sanctuary. According to the DEIS, "less than 3 percent of the total oil and gas resources estimated for the entire proposal are located within the sanctuary" (p. 2-12). If this alternative were adopted, the potential adverse impacts to water quality and marine life would be significantly reduced.

2. The Draft EIS states that the "contribution of oil and gas activities to the general pollution burden of the Southern California Bight is usually less than 7 percent of the burden imposed by the five largest municipal-industrial dischargers." (p. 4-36) This comparison (and references to it within the DEIS) should be recast since it implies that the pollution burden of oil and gas activities is minor when compared to industrial and municipal discharges rather than emphasizing the importance of trying to reduce these dissimilar types of pollution.

27.2

3. The FEIS should amplify, to the extent possible, on the statement in the DEIS that the impacts from drilling muds and cuttings "will begin to be significant." The

discussion should consider the ways in which the impacts will be significant; for example, in the short term or chronic impacts, or the significance of the impacts to various portions of the marine environment (e.g., plankton; other water column organisms, such as fish and marine mammals; the benthos and organisms dependent on it; hard bottom communities; soft bottom communities; or the submarine ridges and banks).

27.3

4. The FEIS should expand on the statement that the long term effects of OCS activities are unknown. There is some information on what potential long term effects can be expected (e.g. Addy, 1979 on Ekofisk Oil Field, Buccaneer Study). While it may be difficult to extrapolate this information specifically to the Southern California Bight, the potential long term impacts should at least be discussed in generic terms. It would be useful if such a discussion also dealt with mitigating measures. Alternatively, a worst case analysis could be done to investigate the necessity of mitigating measures.

27.4

AIR QUALITY

1. Page 1-21 of the draft environmental impact statement (DEIS) describes the instances under which the "Secretary (of the Interior) shall disapprove a development and production plan." This section should be supplemented to explain that the Secretary, pursuant to his affirmative responsibility under section 176(c) of the Clean Air Act, cannot approve a development and production plan which does not conform to a state implementation plan (SIP) for air quality.
2. Table III.A.5-1 on page 3-21 of the DEIS incorrectly identifies the existing air quality for Ventura County as "N" for ozone and unclassifiable for total suspended particulates. All of Ventura County currently is in violation of the national ambient air quality standard (NAAQS) for ozone; part of the county violates the standard for particulates.
3. On page 3-108 the DEIS incorrectly states: "The attainment date for meeting the standards for carbon monoxide and oxidant has been extended to 1987, since attainment by

27.5

27.6

1982 was considered impossible even after the application of all reasonably available control measures." This statement should be clarified in the FEIS to explain that EPA has received requests for a December 31, 1987 attainment deadline extension for carbon monoxide from the South Coast and the San Diego Air Basins and for ozone from the South Coast Air Basin, the San Diego Air Basin and Santa Barbara and Ventura Counties.

27.7

4. Page 4-42 of the DEIS states: "The pollutants emitted from the Inner and Outer Banks tracts are less than one percent of the existing onshore San Diego and South Coast Air Basin emissions." The FEIS should clarify whether the statement refers to the total emissions of all pollutants, or emissions of specific pollutants. In addition, this statement should clarify whether it refers to one percent of the combined emissions from the San Diego and South Coast Air Basins or to one percent of the emissions from each Basin.

27.8

Finally, since the years of peak emissions (from development and production) will occur from 1989 to 1992, are these emissions expected to account for more than one percent of the Basins' loading in those years, because onshore emissions will be reduced as a result of the control program established in the SIP? The use of the one percent figure is ambiguous; the FEIS should state the impact of OCS-related emissions on the South Coast and San Diego Air Basins more clearly by comparing them to the existing emissions inventory and the projected inventories on which the SIP is based.

27.9

5. On page 4-54 of the DEIS, the results of ozone modelling indicate impacts of up to 2.1 parts per hundred million (pphm) or .021 parts per million (ppm). However, the conclusion of this discussion states that there are no significant ozone impacts. EPA disagrees with the conclusion that .021 ppm is insignificant. For example, modelling in the South Coast Air Basin has shown an improvement in ozone air quality of .02 ppm from the implementation of an automobile inspection and maintenance program.
6. The conclusions on page 4-54 of the DEIS imply that, because the increased emissions from activities related to OCS Lease Sale No. 68 would not alone cause a violation of any NAAQS, the degree of adverse air quality impacts

27.10

should be considered insignificant. This is a misleading conclusion. For example, the results of the photochemical oxidant modelling presented in the DEIS indicate that there will be measurable increases of ozone precursor emissions from OCS related activities in 1987. The DEIS notes elsewhere that the OCS emissions typically are transported up to 100 miles by onshore winds. These winds are particularly prevalent during the summer, which also is the height of the smog producing season. During 1987 the South Coast and San Diego Air Basins and Santa Barbara and Ventura Counties will be approaching the deadline for demonstrating attainment of the ozone NAAQS. Any additional emissions from OCS related sources, including mobile sources, that have not been accommodated by the SIP could prevent the attainment of the ozone NAAQS by the required deadline. This clearly must be viewed as a potentially significant impact of the proposed OCS Lease Sale No. 68.

The DEIS concludes that:

(OCS) Sale No. 68 activities, of themselves, are not expected to ... deteriorate air quality to a degree considered significant.

The cumulative impact of all projected development in the Southern California Bight ... are not expected to significantly affect ambient air quality onshore.

In order to justify these conclusions, there should be a demonstration that the increased OCS related emissions are consistent with the emissions reductions, provided for in the SIP, which are necessary to demonstrate reasonable further progress to attain the NAAQS by the required deadline for all onshore areas. Finally, the DEIS should demonstrate that OCS Lease Sale No. 68 conforms, pursuant to section 176(c) of the Clean Air Act, to all provisions and requirements of the EPA approved or promulgated California SIP.

7. On pages 4-50 through 56 the DEIS discusses the results from computer simulation modelling of a worst case analysis of the effects of the projected Lease Sale No. 68 related activities on onshore air quality.

The DEIS states:

The uncertainty in key parameters, such as ... number of sources ... has necessitated a worst case analysis. This method provides estimates of reasonably expected upper limits and reduces the likelihood that impacts will be underpredicted.

We do not believe that the assumptions used in the pollutant modelling study truly represent "worst case" analysis. While the modelling combined the emissions from different phases of offshore activities and selected the peak of cumulative emissions, we believe a worst case analysis should be based on the high estimate of recoverable petroleum resources from the Lease Sale tracts. By using the mean estimate, the modelling effort does not provide an upper limit of the onshore air quality effects from the related activities.

Tables I.B.1.b-1 and 2 of the DEIS indicate that the USGS high estimate of recoverable oil from Lease Sale No. 68 tracts is 252 million barrels greater than the mean estimate. And, for natural gas the USGS estimated that the high quantity is 597 billion cubic feet greater than for the mean. Based on information from Table I.B.1.d-1 in the DEIS, if the high recoverable resource estimates had been used for the air pollutant modelling there would be increased offshore emissions resulting from an additional 121 exploratory wells, 107 delineation wells, 172 platform wells and expanded barging. Using the high recoverable resource estimates would also have shown an increase in onshore emissions associated with expanded processing requirements and support operations. The worst case analysis could conceivably have predicted twice the total air pollutant emissions which would impact onshore air quality as was presented in the DEIS.

We believe the final EIS should either correct the pollutant modelling to reflect an increased estimate of emission sources, based upon the USGS high resource estimates, or clarify that the modelling results from the DEIS's air quality study do not represent a truly worst case analysis.

27.11

27.12

27.13

Responses to U.S. ENVIRONMENTAL PROTECTION AGENCY

- 27.1 Comment noted. Mitigation is discussed in Sections I.B.5, I.B.6, and I.B.7.
- 27.2 We concur that impacts from oil and grease cannot be compared with oil spills. Statements in the EIS were not made to justify the occurrence of just a little added volume of pollutants into the system, but only to describe the state of the environment near Los Angeles as it exists. This is clarified in the EIS. Also, refer to Section III.C.1 of the Sale No. 48 FEIS for a brief discussion of this topic.
- 27.3 The EIS was revised to provide additional information on significant impacts that could occur from drilling muds and cuttings.
- 27.4 The comment suggested expanding on the statement that long-term effects of OCS activities are unknown. Two references were cited but neither are comparable to the Proposed Sale No. 68 area. Also, results from these areas with long histories of production may not reflect oil activity impacts because of unsuitable control sites for the studies. Therefore, the EIS was not revised. Mitigation is discussion in Sections I.B.5, I.B.6, and I.B.7.
- 27.5 This comment will be considered in review of DOI air regulations.
- 27.6 Table III.A.5-1 has been revised.
- 27.7 The EIS has been revised.
- 27.8 The pollutant emissions associated with the Inner Banks are much less than one percent of the projected 1987 emissions of each pollutant in the South Coast Air Basin. The actual percentages are: RHC, 0.05%; NO_x, 0.07%; SO_x, 0.04%; CO, 0.009%; and TSP, 0.02%.
- The pollutant emissions associated with the Outer Banks are much less than one percent of project 1990 emissions of each pollutant in the San Diego Air Basin. The actual percentages are: RHC, 0.3%; NO_x, 0.5%; CO, 0.04%; and TSP, 0.01%. (Projected emissions for SO_x are unavailable.

It should be noted that these data compare OCS emissions with onshore emissions. The potential impacts of these emissions, which is considered more meaningful, are discussed in detail in Chapter VI of POCS Technical Paper No. 81-7.

27.9

See response 27.8.

27.10

Table IV.C.2.a-3 summarizes the results of the reactive modeling. However, inspection of the detailed reactive modeling results presented in Table VI-4 of POCS Technical Paper No. 81-7 shows that most trajectories actually showed negative ozone impacts (due to scavenging of ozone by nitrogen oxides). Given the inherent uncertainties and limitation of reactive modeling, the overall pattern of results is much more meaningful than any single result. It should be further noted that the maximum modeled ozone increases of 0.021 ppm could not be linked with maximum onshore ozone levels in the basin (i.e., they would not occur concurrently with maximum onshore ozone levels). In view of these facts and the worst-case assumptions employed in the reactive modeling effort, the conclusions of the DEIS seem justified. However, as stated in the Final Air Quality Analysis, it is recognized that any increase in ozone concentration of a nonattainment area would be of significance to the local air quality agencies.

27.11

The projected activities associated with Proposed Lease Sale No. 68 would result in additional ozone precursor emissions. Because of this, the study reported in POCS Technical Paper No. 81-7 performed the modeling necessary to assess the potential impacts. As discussed in response 27.10, the result of this study indicates that based on USGS resource estimates and platform locations, the worst-case meteorology and maximum emissions possible, some trajectories result in negative values and a number of them show positive incremental emissions. However, since these increased concentrations in the basin, it is not clear that they would interfere with any future attainment plans.

27.12

The Clean Air Act requires the states to develop SIPs that will ensure attainment of the NAAQS by certain deadlines; the identification and implementation of methods to achieve the NAAQS is left largely to the states. While SIPs include emission-reducing measures, the ultimate goal of any SIP is to meet the NAAQS, rather than specify emission levels. Hence, the OCS emissions per se are not of concern; rather, a primary consideration is that potential onshore impacts

resulting from the emissions. The air quality impact analysis (POCS Technical Paper No. 81-7) showed that, in general, OCS emissions would not significantly affect onshore ambient air quality. It is assumed by the study that the air quality regulations applicable to OCS activities are those of the USGS (see Chapter III of POCS Technical Paper No. 81-7), rather than California's SIP.

27.13

Throughout the air quality impact analysis (POCS Technical Paper No. 81-7), the use of worst-case assumptions was stressed in developing emissions, operational parameters, and meteorological inputs for modeling. In the case of reactive modeling, many trajectories were specifically developed to pass over a number of platforms as well as mobile sources (barges, tankers) before moving onshore, and it is unlikely that a realistic trajectory could have been devised to pass over the additional platforms that might be associated with the high resource estimate. Hence, the air quality analysis is based on very conservative assumptions which used in conjunction with a resource estimate with a probability of only five percent seems too unrealistic, and may be of little value to local and state agencies.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON 20426

IN REPLY REFER TO:

Manager, Pacific OCS Office
Bureau of Land Management
1340 W. 6th Street, Room 200
Los Angeles, California 90017

AUG 17 1981

Dear Sir:

We appreciate the opportunity to comment on the draft environmental impact statement (DEIS) evaluating the proposed Southern California Outer Continental Shelf (OCS) Oil and Gas Lease Sale No. 68. The Federal Energy Regulatory Commission's (FERC's) Office of Pipeline and Producer Regulation offers the following comment.

The following additional information should be provided in the discussion of "Pipeline Systems" beginning on page 3-98.

Pacific Gas and Electric Company (PG&E) is also a major natural gas distribution company in California. PG&E has relied on three sources of supply for distribution in California markets: (1) gas from the Southwest delivered at the Arizona-California border by El Paso Natural Gas Company, (2) gas from Alberta, Canada, delivered by Pacific Gas Transmission Company (PGT), and (3) gas from producing fields within California. Natural gas produced as a result of the proposed lease sale could be transported by constructing a new onshore/offshore pipeline to an interconnection with PG&E's system or to the other pipeline systems identified in the southern California area. PG&E could also receive gas from the lease sale area through displacement or exchange agreements with gas companies in southern California. Therefore, all areas of the state could eventually benefit from the natural gas produced from the lease sale.

The Commission is directing its efforts toward regulatory actions to improve domestic natural gas supplies. More specifically, the Commission is presently analyzing proposals

for additional transportation of natural gas into California. The Commission staff recognizes the national importance of OCS exploration and development, as well as the need for effective environmental safeguards. We believe that the DEIS provides a thorough presentation of both concerns and look forward to reviewing the final document.

Very truly yours,

Eugene C. Williams
Kenneth A. Williams, Director
Office of Pipeline and Producer
Regulation

Response to U.S. FEDERAL ENERGY REGULATORY COMMISSION

- 3 -

28. Section III.C.6 of the EIS has been revised as suggested.

OPPR
Taylor, G. :bjf
8/14/81

cc: Mr. Szekely
Mr. Hoffmann
Mr. Lazarus
Dr. Shuster
EEB Files

RA 8/14/81

RS
8/14/81

7-217

29. Comment noted.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 20 1981

Manager
Pacific OCS Office
Bureau of Land Management
1340 West 6th Street
Los Angeles, California 90017

Dear Sir:

This letter is in response to your letter of May 20, 1981, requesting our review of the draft environmental impact statement (DEIS) concerning the proposed Outer Continental Shelf oil and gas lease sale (OCS Sale No. 68). We have reviewed the draft statement with regard to the location of the 218 tracts of submerged land off the coast of California in relation to nuclear power plants in the vicinity. Our review indicates that there are no nuclear power plants in close proximity to the proposed land sale. Therefore, we have no comments or recommendations on the draft.

29

The Nuclear Regulatory Commission appreciates the opportunity to review and comment on the draft environmental impact statement for the proposed OCS Sale No. 68.

Sincerely,

A handwritten signature in cursive script, reading "Daniel R. Muller".

Daniel R. Muller Assistant Director
for Environmental Technology
Division of Engineering

cc: Director (542)
Bureau of Land Management
Washington, DC 20240

7-218



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August 13, 1981

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The Pacific Section of the American Association of Petroleum Geologists (AAPG) has reviewed the Draft Environmental Statement (DEIS) for OCS Lease Sale No. 68 and our comments are attached. AAPG is the world's largest organization of earth scientists, with a worldwide membership exceeding 26,000. Approximately 1400 of these members, mostly in California and Alaska, are affiliated with Pacific Section AAPG. This review, and testimony at public hearings July 28-31, 1981, was prepared and presented by a panel including Bruce Barron, John F. Curran, Dr. Peter J. Fischer, Donald E. Hallinger, L. F. Ivanhoe, Jack R. Sheehan, Dr. Harold H. Sullwold, and chaired by T. L. Wright (immediate Past President of Pacific Section AAPG and currently chairman of its Public Affairs Committee). The panel has an aggregate of more than 240 years of professional experience, mostly in petroleum exploration in the on-shore and offshore basins of California, but including worldwide petroleum resource evaluation. All are registered geologists in the State of California.

Our review and testimony has concentrated upon those topics which are within the expertise of our membership and, specifically, of the panel: petroleum geology and resource estimates, exploration and drilling operations, and certain aspects of the environmental impacts of petroleum exploration and development. The preparation of this statement was authorized by the Pacific Section Executive Committee at its regular meeting on July 14, 1981.

T. L. Wright
T. L. Wright, Chairman
Public Affairs Committee

Attachment



PACIFIC SECTION

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REVIEW OF DRAFT ENVIRONMENTAL IMPACT STATEMENT Proposed OCS Oil and Gas Lease Sale No. 68

GENERAL

Experience has shown that in addition to meeting the legal requirements established by the National Environmental Policy Act and the Council on Environmental Quality, the Environmental Impact Statement for an OCS lease sale must fulfill two other essential roles:

- 1) It must include, in summary form, all the information necessary to reach a reasonable conclusion as to the potential benefits and impacts of the proposed sale, because it is the only document which concerned members of the public can be expected to have read. At public hearings or in written statements regarding the sale, no individual, legislator or member of a local government can be held accountable for data or expert conclusions which are not contained in the Draft EIS. For that reason it must be balanced, comprehensive and organized for easy access to its subject matter. To reduce the possibility of misleading the reader, estimates of such major elements as resource potential and oil-spill risk must be fully qualified as to the probability and the degree of uncertainty attached to the estimate. When potential impacts would normally be presented or mitigated by regulations or standard operating procedures this should be stated or referenced within the discussion of the potential impact. 30.1
- 2) The EIS should have a much more complete index than is found in the Draft EIS for Sale No. 68 or previous EIS's. At present, the concerned reader cannot readily locate specific subjects of particular interest, and thus may erroneously claim the DEIS to be deficient in its coverage of that subject. Furthermore, the Final EIS will usually serve as the basic reference for post-sale environmental reports and so should include a detailed index and a complete bibliography. 30.2

Two specific deficiencies in the index for the Sale No. 68 DEIS are:

- 1) It should include Appendices E and F, which contain significant information; 30.3

- 2) The detailed subdivision of certain subjects such as Alternative Energy (12 subheadings) and Cultural Resources (21 subheadings) should be followed in all other significant subjects. For example, Birds are not subdivided, though the Brown Pelican (not indexed) has at least three major entries. And Mammals are lumped, with no separate listings for Sea Otters (9 or more entries) or Whales (4 or more entries).

30.4

GEOLOGICAL DISCUSSION

The geological discussion in Section III.A.1 is generally correct but far too brief. Its six pages of text (plus two figures and two "Visuals") should be expanded to something comparable to the 50 text pages and 13 figures allocated to the discussion of the affected biological environment (Section III.B.). Specifically, it must adequately address the geological factors relating to resource estimates and to geological hazards in the sale area.

30.5

U.S.G.S. Open-File Report 80-198, ("A Summary Report of the Regional Geology, Petroleum Potential, Environmental Geology, and Operational Considerations in the Area of Proposed Lease Sale No. 63, Offshore Southern California" by J. G. Vedder, et al) was released in February, 1980. That was during the early stages of compilation of the Sale 68 DEIS, yet OFR 80-198 does not appear to have been referenced or used in the preparation of the geological portions of the DEIS. OFR 80-198 provides an excellent basis for understanding the resource estimates and geological hazards of the sale area. It is recommended that the present Section III.A.1 of the DEIS be replaced by pages 1 thru 28 and 35 thru 43 of OFR 80-198, perhaps with modifications if necessary.

30.6

Deficiencies in the geological discussion in the DEIS include:

- 1) Its stratigraphic discussion (less than one page) fails to convey the great variability in reservoir beds, petroleum sources beds and burial history between the geologically-dissimilar areas of the Santa Barbara Channel, the inner and (especially) outer basins, and the outer ridges and troughs. The attempt to generalize the entire Sale 68 area onto the single stratigraphic column of Figure III.A.1.a-2 has resulted in a meaningless oversimplification. Open-File Report 80-198 uses 20 columnar sections for the sale area; U.S.G.S. Professional Paper 679 used 5 columnar sections just for the Santa Barbara Channel. With an adequate consideration of stratigraphic contrasts, the resource estimates (discussed below) in the Draft EIS might have been guided into more realistic conclusions.

30.7

- 2) The statement (p.3-5): "High seismicity characterizes all of the California coastal region" is a misleading oversimplification. Open-File Report 80-198 describes both the inner basin and banks area (p.40) and the Santa Rosa - Cortes Ridge area (p.42) as "moderately active seismically", and provides a good discussion of the geographic variability of seismicity, as well as other geological hazards, in different parts of the Sale 68 area.

30.8

A table showing maximum design earthquakes for the significant active faults in the Sale 68 area would be a useful addition to the Final EIS. Though not included in OFR 80-198, such a table could be compiled from generally-accepted estimates which have been published in previous environmental statements and geotechnical reports. The table might also include predicted site rock acceleration, at representative Sale 68 tracts, for these design earthquakes. Such a table would show that no earthquakes larger than the 1927 Point Arguello quake are to be expected in the Sale 68 area.

The suggested table would show that the maximum seismicity is predicted in the area of long-standing oil production along the Santa Barbara coastline, and its discussion should make the following point: Major earthquakes have occurred along the Santa Barbara coastline since oil production began there; these include the 1925 Santa Barbara earthquake, magnitude 6.3, and the 1941 quake off Carpinteria, magnitude 5.9. There is no indication that any of these quakes damaged oil installations at Elwood, Summerland, Rincon or elsewhere, nor of any related oil spills. The 1933 Long Beach earthquake did not result in any damage or spills involving the thousands of wells along the Newport-Inglewood Fault zone, probable source of that quake. In the few known instances where faulting has damaged oil wells -- as at Athens-Rosecrans and Dominguez in 1941 and 1944 -- there was no surface spillage of oil. Also, none of the major oil pipelines which traverse the epicentral region of the 1971 San Fernando earthquake were damaged in that quake. So, it is unlikely that earthquakes in the Sale 68 area would cause significant damage to OCS production and pipeline facilities, and even less likely that oil spills would result from earthquakes. These conclusions are supported by the discussion on pages 4-45 and 46 of the Draft EIS, which describes the state-of-the-art engineering design techniques which further minimize the chances of earthquake damage to OCS oil facilities.

30.9

- 3) As now written, the discussion of geohazards on pages 3-4 to 3-7 gives the impression that nothing can be, or is, done to neutralize these hazards. That section should reference other parts of the EIS which list the lease stipulations that mitigate such hazards. On pages 1-36 to 1-38 are lease stipulations relating to mass movements, submarine canyons or channels, and active faults. That section states: "Consequently, it is believed that all potential geological hazards are adequately mitigated." Pages 1-46 describe the Structural Verification Program which ensures that platforms and OCS pipelines will withstand seismic shaking and surface fault rupture. The simple matter of cross-referencing in the Draft EIS

30.10

may prevent needless fears from being raised. Also, the EIS should note that active faults and certain other potential sea-floor hazards show up clearly in the Recent sediments which blanket nearly all of the ocean floor. High-resolution geophysical surveys enable these potential hazards to be mapped (and thus, avoided) with a precision rarely achieved on land.

Oil seeps shown on the map ("visual") in Volume 2, showing shallow oil and gas occurrences appear to be incomplete by comparison with the equivalent map in the Sale 48 EIS. The text discussion on pages 3-6 and 7 should include a more comprehensive reference to natural seeps; for example, on page 8-30: "There are estimated to be as many as 2,000 to 2,665 natural oil seeps off the Santa Barbara coast-line. These seeps may be releasing as much as 670 barrels of oil per day into the marine environment."

- 5) On pages 3-108, a section captioned "Geology" is thoroughly confused and should be rewritten. Though under the general heading of "Future Environment Without the Proposal," it speaks of "how many phenomena may be influenced by the proposed action" (emphasis added). Much worse, it repeats a claim that "seismic activity may be precipitated by OCS drilling and development activities," without providing any further discussion. If that alarmist claim is worth including in the Final EIS, it deserves to be explained. In a few onshore oil fields, secondary recovery projects using water injection have produced seismic activity so slight that it can only be detected by delicate instruments and is not felt by people nearby. This phenomena has also been repeated on an experimental basis. But this type of microseismicity is no cause for alarm.

RESOURCE ESTIMATES

In public and media discussions of Sale 68 -- as with Sale 53 and other recent OCS proposals -- resource estimates contained in the Draft EIS have been badly misused. Unfortunately, no amount of qualification or explanation can prevent the deliberate abuse of these statistical estimates. The Draft EIS for Sale 68 does include, on pages 1-4 to 1-6, such statements as: "...methods do not exist which can accurately provide resource amounts prior to actual drilling," and "There is a high degree of uncertainty regarding the level of oil and gas resources which might be present in OCS areas," and "...little substantive information is available because drilling has not taken place on most tracts," and "...estimates of resource potential used here are speculative..." But no real attempt is made to explain the derivation of these estimates. Indeed, the Draft EIS contains the following incorrect and misleading statement (p.1-4): "Table I.B.1.b-2 gives these estimates of oil and gas at the 95 and 5 percent confidence intervals. The lower figure in this table represents the minimum amount of oil and gas believed to exist, and the higher figure represents the maximum."

The 5 percent confidence level means, of course, that there is believed to be only a 5 percent chance that the recoverable petroleum resources will exceed the given number. Probably the real meaning of these estimates

can only be conveyed by the use of graphs of probability distribution, such as are included in U.S.G.S. Open-File Report 80-198 as Figures 10-13. Figure 13 is included as Attachment 1 of this Review, with annotations which show the 95 and 5 percent confidence levels.

It is recommended that the entire section on Petroleum Resource Appraisal, pages 29 thru 34 of OFR 80-198, be incorporated into Section I.B.1.b. of the Sale 68 EIS. In addition, that section should clearly explain the following factors:

- 1) The resource estimates provided on Tables I.B.1.b-1 and I.B.1.b-2 are estimates only for the tracts included in Sale 68; these are less than 7% of the unleased acreage within the Sale area (see Attachment 2). Similarly, undiscovered oil from the Southern California OCS (total Sale 68 area) is expected to total 4.4 billion barrels (conditional means), with a 1-in-20 chance that 7.6 billion barrels will be found. These estimates compare with 230 million and 482 million barrels for the Sale 68 tracts. The 4.4 billion and 7.6 billion-barrel figures are nowhere mentioned in the Draft EIS; they should be emphasized and the point made that Sale 68 is a limited but essential step towards the development of these potentially very large energy resources.
- 2) Estimates at the 5% confidence level actually mean that there is a significant chance (though less than 1-in-20) that more --perhaps much more -- than 4.4 billion barrels of oil is still to be discovered in the Santa Barbara Channel. The past history of petroleum exploration tells us that these long odds are the natural habitat of giant oil and gas discoveries. Statistics for the distribution of oil resources by field size (Attachment 3), though only indirectly comparable to the probability estimates of the Sale 68 DEIS (Section I.B.1.b) or Figures 10-13 of OFR 80-198, serve to illustrate this vital point: half the world's oil has been found in 0.1 percent of the world's oil fields. (This distribution is graphed on Attachment 4, for comparison with Attachment 1.) This is the realm which must be explored if we are to make significant contributions to easing our domestic energy shortfall: the much less than 1-in-20 chance that a given basin or trend will contain a giant oil field.

The oil industry will continue to risk these long odds in the hope of finding giant oil fields because they offer the greatest opportunity for profit and for continuity of supply. They may be found in previously-unexplored portions of the Sale 68 area, or even in the Santa Barbara Channel; for example, the giant Hibernia Field (more than one billion barrels) was discovered after 40 previous dry or

subcommercial wells had been drilled offshore Newfoundland. These giant fields can only be discovered by drilling. Congress in 1978 called for the inventory of OCS energy resources on an urgent basis. The only effective way to do this is through the application of state-of-the-art technology and multiple geological concepts as embodied in competitive exploration under the OCS Lands Act. The Final EIS should include the above points.

In addition, the Final EIS should either correct or explain several apparent major inconsistencies in resource estimates and in the development assumptions derived from them, for example:

- 1) To date, something between 500 million and 1 billion barrels of oil has been discovered in the Santa Barbara Channel. About 57 percent of the Channel's OCS area has been leased at one time or another, but only about 30% of the tracts have been drilled; because of environmental permit delays only 7 of the 47 Channel tracts leased in 1979 have been tested as yet. The U.S.G.S. has estimated (in their Open-File Report 81-192, just released) that undiscovered recoverable oil in the Santa Barbara Channel ranges between 200 million and 3.7 billion barrels, with a mean of 1.3 billion barrels. The 90 Santa Barbara Channel tracts offered in Sale 68 comprise about half the Channel's OCS area, so one might expect them to contain something like half the undiscovered oil, or a mean of 650 million barrels. Yet the high estimate given in the Draft EIS (p.1-5) is only 126 million barrels and the mean is a mere 67 million, perhaps an order of magnitude too low. If there is a reason for this startling anomaly, it should be carefully explained in the Final EIS.
- 2) Eight exploratory wells have been drilled in the Outer Banks and Basins and none found oil or gas, yet Table I.B.1.b-2 shows a high resource estimate of 216 million barrels for the 53 tracts being offered in this region. The corresponding estimate for the prolific Santa Barbara Channel is 126 million barrels, on 90 tracts, nearly twice the area, but only about half the resource -- exactly the reverse of what one would expect. The Final EIS should either correct this, or explain it.
- 3) Table I.B.1.d-1 estimates that the mean resource estimate for the Outer Banks -- some 93 million barrels -- would be discovered by 8 wildcat wells and result in 4 platforms. This is difficult to accept in a region where the 8 wildcats already drilled found absolutely nothing.

The development assumptions (Table I.B.1.d-1) are correct in estimating more wells per platform for the high resource cases than for the low and medium, but this point deserves more emphasis. The number of wells and platforms does not increase in direct proportion

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to the amount of oil found. High-case discoveries mean giant oil fields, and these almost always are characterized by thick oil zones, high productivities, and substantially fewer wells and platforms per volume of recoverable oil.

The statement, on pages vi, 2-12 and 2-15, that "Less than 3 percent of the total oil and gas resources estimated for the entire proposal, are located within the (Channel Islands National Marine) Sanctuary" deserves further comment. That portion of the sanctuary north of San Miguel, Santa Rosa, Santa Cruz and Anacapa islands is within the highly productive Santa Barbara Channel petroleum province, and contains at least eight large anticlinal structures and more than 20 smaller ones. Eleven wells drilled within this area have established a significant oil potential; at least two of those wells discovered producible hydrocarbons but these finds were not developed because of the low price of oil at that time. Geologists very familiar with this part of the Santa Barbara Channel note that geologic structure and stratigraphy are somewhat complex, contributing to a relatively high exploratory risk; however, they consider this a highly prospective area because of the numerous structural traps, the occurrence of good reservoir beds ranging in age from Cretaceous to Miocene, and the widespread indications of petroleum. Their conservative estimate of economically-recoverable oil from this portion of the Channel Islands Marine Sanctuary is 250 million barrels. The much smaller estimates suggested in the DEIS can only be explained by noting that very little of the sanctuary area proposed for leasing in Sale 68 is within the Channel proper; most of it is located in much less promising areas to the east, west and south of the northern Channel Islands.

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PRIOR OFFSHORE AND ONSHORE OIL ACTIVITIES

The Environmental Impact Statement for OCS Lease Sale 68 most certainly should include an adequate summary of past exploration and development within and adjacent to the Sale area, and the status of current and proposed activities. Some of this information now may be found in various parts of the Draft EIS, principally in the appendices. It deserves to be presented coherently and in one place so that the reader can obtain a true perspective of the scope of the proposed Sale 68 activities; and their potential impact -- or lack of impact.

Within the Draft EIS, Table IV.A.2.b-1 (on page 4-29, curiously located in the discussion on Environmental Consequences) presents only a list of dates under the title, "History of Oil and Gas Development Off Southern California," but there is no accompanying discussion. Appendix F includes a useful summary (on page 8-50) of past leasing and exploration in the Southern California Bight; 185 exploratory wells have been drilled through February of this year. That information should be featured in the main body of EIS and used to document the absence of any subsurface geologic hazards and thus, of any significant likelihood of a blowout or related oil spill. The number and location of

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those exploratory wells also is highly relevant to the accuracy of resource estimates for Sale 68. For that reason, they should be shown on the large colored map ("maxi-visual") in Volume 2 of the Sale 68 EIS. That map does already show the locations of existing State and Federal platforms but should also show the locations of the 5 proposed platforms mentioned on page 3-101. Also, the brief but useful summaries of recent rates of seismic surveys and drilling which are part of Appendix F (pages 8-53 and -54) belong in the main body of the EIS, where they would provide a perspective for the development scenarios.

Table II.B.1.d-1 on page 2-9 provides a statistical summary of OCS leasing, exploration and development activities off Southern California. That table should be accompanied by a discussion which notes the drilling moratorium which followed the 1969 oil spill, and the lawsuits and lengthy permitting delays associated with the subsequent sales in 1975 and 1979. Instead, on page 2-8, we find that table used to support a very questionable assertion: "In past California OCS Sales, initial estimates of oil and gas resources have turned out to be overly optimistic. That is, the oil and gas reserves discovered and consequently the number of platforms installed, were far less than expected." Can the author of that paragraph be so naive as to believe that the 18 tracts he refers to have been substantially evaluated? When tracts from the 1968 sale still have pending exploration wells programmed? When 54 of those 182 tracts are from the latest sale just 2 years ago, and when for 14 months after that sale, baseless environmental roadblocks kept all but 1 well from being drilled? No, because of the extremely slow pace at which exploration and development have been allowed to proceed, it will be many years before we know how much oil and gas those leases contain and before the last platforms have been installed on them. The EIS should make this clear.

The knowledge and use of petroleum in coastal Southern California began with the Chumash people in Precolumbian time. Eighty years ago offshore oil was produced from piers at Summerland, and what may have been the world's first offshore drilling island was installed in 1932 off the Rincon, half a mile from shore. The foundations for today's deep-drilling technology were laid in fields such as Ventura Avenue, and controlled directional drilling was first used at Huntington Beach and other fields along the Southern California coast. A brief discussion of this history would illustrate the significant point that during the past 100 years, California's oil industry has consistently been able to develop the technology to meet its needs. Californians have exported that technology worldwide, from factories in towns like Long Beach, Brea, and Ventura. Now these same factories are providing state-of-the-art technology for deep-water drilling, sea-floor completions, and ultra-safe offshore production facilities. And in this way they continue to provide jobs and energy for Californians.

In fact, oil and gas development is a currently and historically significant activity in Southern California. The Draft EIS errs in such statements as (page 4-27): "The use of existing harbors could disturb normal onshore

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activities." Petroleum exploration and production are normal activities in this region and the EIS should make that point very clear.

For example, the discussion of Oil and Gas Infrastructure on page 3-98 should be expanded to note that some 91 onshore and 18 offshore oil fields --including the flush new Hondo field -- are currently producing nearly 400,000 barrels per day in the region directly adjacent to the Sale 68 area. This is 30 percent of the oil refined in Southern California. Furthermore, there is no mention of local oil production in the discussion, on page 3-118, of changes expected to occur in that infrastructure if Sale 68 does not take place. This section should make clear that these oil fields -- particularly the onshore ones -- are in a normal decline, and that enhanced recovery projects are already in operation in most areas where this is feasible. As the onshore fields are pumped dry and abandoned, their land will become available for other uses -- much more land than will be needed for the onshore facilities associated with further OCS development. We have already seen this happen at Huntington Beach, Seal Beach, Signal Hill, Buena Park and elsewhere. In other words, the natural evolution of Southern California oil production, moving from onshore to offshore, will have positive impacts in terms of land use.

The Draft EIS should take this broader view. It should recognize that Sale 68 and later OCS sales will not increase employment so much as prevent unemployment in the region's traditional oil-field jobs. True, there is a hint of this on page 4-44. But that discussion (and others in the report) imply that OCS development will draw outsiders, transient workers. Not so! These workers will come from the declining onshore fields of Orange County, Los Angeles County and Eastern Ventura County -- they might not even need to relocate their places of residence, or move their kids in school. Many workers were hired during the decade following World War II and will be retiring during the 1980's. They will be replaced by permanent employees hired and trained locally, and including a significant number from minority groups.

In short, what we're talking about is not adding a new industry or coastal use but simply maintaining an existing level of economic activity: replacing declining production with new fields, keeping a steady supply of local oil flowing to our local refineries and thence to our cars, trucks and other local customers. The EIS should emphasize this process.

With the socio-economic results of Sale 68 viewed in this context, it is clear that certain specific statements in the Draft EIS need to be corrected, for example:

- 1) On page 4-45, the prediction of possible "crowding and congestion" in schools and other public facilities.
- 2) On page 4-31: "Supply and crew boats...could interfere with commercial vessels, commercial fishing boats, recreation boats and harbors."

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Certainly, supply and crew boats are commercial vessels and have been operating for more than 20 years, employing local people and using the same facilities at Hueneme, Carpinteria and Long Beach that will service the Sale 68 drilling. This is acknowledged on page 4-72, for Port Hueneme.

- 3) On pages 4-107 and -108, the extensive listing of onshore facilities -- even including refineries -- associated with OCS development, conveys the misimpression that Sale 68 will lead to substantial new onshore industrial development; the qualifying phrase (page 4-107) that "there is OCS development in the area at present, and most onshore facilities are already in existence" needs to be given much greater emphasis. It should also note that at the present pace of permitting and platform approval (or even any credible speedup within the present statutes) existing onshore facilities will be fully adequate to handle platform construction and development drilling.

DRILLING MUDS AND CUTTINGS AND OTHER NATURAL DISCHARGES

Estimates of the total volumes of Sale 68 drilling muds and cuttings, as given in Table I.B.1.d-2 and page 2-10, are clearly erroneous. Due to an error in column headings, they are a thousand times larger than the correct estimates presented in Table IV.A.5.a-1 (page 4-34). This should be corrected in the Final EIS.

In addition to this specific error, the discussion of drilling muds and cuttings is ambiguous and incomplete. On page iii of the Summary, and again on page 2-2, we read that "the cumulative effects of dumping of drill cuttings resulting from Sale 68 and previous sales will begin to be significant," but page 4-47 acknowledges that "Drill cuttings should cause no degradation of water quality in any of the lease sale subareas," and goes on to explain why not. Page 2-16 and 4-96 speak of the "deleterious effects from drilling muds, cuttings and formation water" but nowhere does the Draft EIS substantiate any such effects; contrary to the statement on page 4-73, there is no "discussion" (of adverse impacts) in Section IV.A.5.a. On page 2-2, it notes merely that "the long-term effects of discharges from these (platforms and drilling vessels) is unknown." The Final EIS should attempt to reconcile these opposing views and present a realistic analysis of the potential impact of drilling mud and cuttings.

Any such analysis of the potential chemical and physical impacts of mud and cuttings discharged into the ocean must include a discussion of the following significant factors:

- 1) All washed drill cuttings, and more than 90% of muds, are chemically inert:
- a) Drill cuttings are little chips of rock slightly larger than rice grains that are ground up by the drill bit and flushed to the surface,

where they are washed before being dumped. These are ordinary sedimentary rocks, chemically identical to the sediments being deposited today in the Santa Barbara Channel and elsewhere in the seas off Southern California. The difference -- the only difference -- between drill cuttings and normal modern sediments is the texture. The cuttings come from hard rocks, compacted by the weight of deep burial over millions of years. But after a year or two on the sea floor they return to the original clay, silt or sand. One local exception is the chert of the Monterey Formation. This siliceous rock is also chemically inert but will not turn soft with time. However, it comprises a very small percentage of drill cuttings.

- b) Drilling muds, too, are composed primarily of natural sedimentary material that was originally deposited in ancient seas and lakes. For instance, a mile or two north of the mission at Ventura, a stratigraphic formation called the Mudpit Shale has been quarried for decades and used to make up drilling mud for the Ventura Avenue field and elsewhere. It is the same material that washes down the Ventura River and into the channel every rainy season. Other major constituents include pure sedimentary rocks such as bentonite (an altered volcanic ash) and salt. Barite, used as a weighting agent in drilling muds, often occurs in sedimentary rocks as a precipitate from sea water, but in its pure form is mined from veins. These natural constituents of the seas comprise 90% of drilling muds. Most of the remainder is inert organic material used as fillers.

- c) Formation water is another effluent or discharge listed in the Draft EIS, which correctly describes it on page 4-33 as "water that was laid down interstitially with the sediments in the geological past." Oil field brine, in other words, is fossil sea water, and commonly even has the same salinity and other chemical attributes as today's ocean. Discharged into the sea, it is untraceable, indistinguishable -- recycled back to the ocean it came from millions of years ago. The EIS should make it clear -- in the discussion on page 4-47, for example -- that clean formation water (from which all oil has been separated) is not a pollutant.

- 2) The EIS should include a brief discussion of the dilution and dispersion of these and other discharges by ocean currents, the settling characteristics and areal distribution of drilling muds and cuttings (the single sentence on page 4-47 is inadequate), and the winnowing and transportation of cuttings and natural sediments on the sea floor. The statement on page 2-2 of the DEIS: "Water quality will be degraded to a distance of about 1,000 meters from oil platforms and drilling rigs" appears to mean that, during brief periods of maximum discharge, this is about as far as the mud or cuttings can be detected before complete dispersion; if so, this should be clearly indicated.

3) The DEIS states (page 4-47): "The accumulation of cuttings in the area represents a significant proportion (ca. 40%) of the settleable solids being added to the ocean off Southern California." This is grossly incorrect because -- as computed in Table IV.A.5.a-2 -- it considers only municipal-industrial discharges and omits the vastly greater quantities of natural sedimentary materials which are nearly identical to drilling muds and cuttings in their physical characteristics and impacts (i.e., water turbidity, smothering of benthic marine organisms). Some comparative figures are:

- a) 56,000 barrels/year of mud and cuttings from Sale 68 activities, averaged over 11 years of active drilling (as projected from the development scenario) and using volumes from Table IV.A.5.a-1.
- b) 6,360,000 barrels/year (114 x Sale 68 average) of sediments entering the eastern Santa Barbara Channel, according to research at the Naval Civil Engineering Laboratory at Port Hueneme. This includes an annual average of 1,300,000 barrels moving eastward along the beach into Ventura County, 560,000 barrels carried down the Ventura River, and 4,500,000 barrels of sediment deposited by the Santa Clara River.
- c) 1,500,000 barrels in 3 days (27 times the Sale 68 annual average) carried down the Ventura and Santa Clara Rivers during the peak of the 1977-78 floods (Scott Thornton; Geo-Marine Letter, in press).
- d) 100,000,000 barrels of sediments (1,800 times the Sale 68 annual average) deposited on the Santa Barbara-Oxnard Shelf during the 1969 floods (R. L. Kolpack, 1971, Biological and Oceanographical Survey of the Santa Barbara Channel Oil Spill 1969, Ed., Allan Hancock Foundation.)

OFFSHORE ARCHEOLOGICAL RESOURCES

Statements on page 3-105 of the DEIS: "The offshore region of the Bight is apparently rich in cultural resources. Types of submerged resources are aboriginal remains..." and "There is a relatively good chance that many submerged prehistoric resources have been preserved" are clearly contrary to geological facts. These resources are optimistically expected to be found on that portion of the continental shelf which extends to approximately 400 feet below today's sea level. Certainly that area of the shelf was exposed during the latest Ice Age, when prehistoric people occupied North America, and most of their early habitations may have been sited along the beaches and lagoons which since have been submerged.

But the process of submergence was not a gentle one. Dr. Orrin Pilkey, a leading marine geologist, describes it well:

"The broom that sweeps and narrows the coastal apron is a narrow one, an area of high wave energy known as the shoreface.... This constant sweeping has

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kept sand in motion, building both beaches and underwater bars..... It is constantly cleaned and accreted by the sweep of the waves..... In winter, strong wave action chews into the beach and narrows the berm." (Kaufman and Pilkey, 1979, The Beaches are Moving, Anchor Press/Doubleday.)

Waves which roll serenely across the deeper waters of the Outer Continental Shelf will curl over and start chewing when they hit the shallow water of the shore face. Even in the relatively sheltered waters of the Eastern Santa Barbara Channel, the erosive power of winter waves can be awesome. Cottages at Sea Cliff were destroyed by waves during the winter of 1950-51. Just a year and a half ago, a rather ordinary storm cleaned all the sand off the beach east of the Carpinteria Pier. Even the valleys of coastal streams will be swept repeatedly by tidal scour during the process of marine transgression and submergence. Can aboriginal dwelling sites survive these natural forces? Will submerged artifacts be found in the sort of assemblages that are useful to archeologists? Almost certainly not. The rare submerged sites thus far discovered along the California Coast -- La Jolla Cove, and Corral Beach, for example -- are sheltered within a rocky coastline and not out on the open shelf where drillships or platforms might be placed.

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The author of section III.C.9 of the Sale 68 DEIS was aware of the high probability for erosional obliteration of these early archeological sites; it was clearly stated in a reference cited on page 3-104 (see Attachment 5). But the DEIS makes no mention of this factor and thus is able to reach the unjustifiably optimistic conclusions on page 3-105 (cited above). The Final EIS must correct this unbalanced presentation by including the complete quotation from Bickle (page 3-104) and providing further discussion of the probability that prehistoric sites were eroded during the Holocene transgression. And the conclusion on page 3-105: "There is a relatively good chance that many submerged prehistoric resources have been preserved" should be revised accordingly.

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OIL SPILL STATISTICS

Oil-spill probabilities used in the Sale 68 DEIS (and in all other recent analyses and predictions related to OCS petroleum development) appear to be greatly overstated because, as noted on page 4-7 of the DEIS; "for spills 1,000 barrels or larger, the period from 1964 to 1979 was used." This 16-year statistical baseline incorporates two radically different eras: the period of lax OCS regulation which led to the 1969 Santa Barbara oil-spill, and the very much stricter regulations and inspections (and consequent improvements in industry's OCS practices and technology) which have been introduced as a result of that spill.

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As the DEIS points out (pages 4-7 and 4-8), there is at present no uniform and comprehensive tabulation of oil-spill statistics. To attempt such a tabulation, or to apply statistical analysis to the various data bases currently available, was not within the scope of this review. However, we believe that a recent summary (Attachment 6) of significant incidents in the Gulf of Mexico

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OCS provides a clear indication of what would be discovered if such a tabulation and analysis were made.

The attached summary includes blowouts, platform spills and pipeline spills connected with Gulf of Mexico OCS petroleum operations. It shows considerable year-to-year variability, with spills and resultant pollution peaking at about the time of the Santa Barbara incident (not included, but the 1969 Santa Barbara blowout and subsequent pipeline spill have been the only significant pollution incidents in the Pacific OCS to date). One reasonable analysis, which accepts a five-year period for the development and effectuation of regulations and technology after the Santa Barbara spill, is as follows:

Period	Barrels of Oil Spilled Prod.(millions)		Bbls Spilled per Million Prod.	Nr. Spills per Billion Bbls Prod.
1964-79	348,695	4,172	83.6	7.43
1964-74	342,345	2,852	120.04	9.11
1975-79	6,350	1,320	4.8	3.78

This analysis, however tentative, suggests that the Sale 68 DEIS applies an incidence rate, for significant oil spills, that is 2-1/2 times higher than it should be, and a volumetric rate -- number of barrels spilled per million barrels produced -- that is something like 17 times too high. Within the DEIS, the only hint of this extremely significant improvement in OCS environmental protection is found in the statement on page 1-44: "Last year, only two oil spills of more than 50 bbls. occurred within U.S. OCS waters, with the larger one involving 135 bbls. of oil." Granted that time will probably not permit an adequate synthesis of oil-spill data and its incorporation into the Final EIS for Sale 68, that document should at least note clearly that the spill rates used are likely to be about twice the rates which have prevailed under current regulations and operational practices.

The Draft EIS exhibits a second major flaw in its treatment of oil-spill risks: the effect of substituting Sale 68 production for the equivalent volume of tanker imports is handled in a most contradictory fashion. For example:

- (Pages vii and 2-17), "The continued importation of oil via tankers is expected to result in spills";
- (Page 4-7 and 8-24), "Whatever is not produced in the area will have to be imported and transporting oil has historically posed a much higher oil spill risk than drilling and producing locally."
- (Page 4-8), table shows much higher spill rates (10,000+ bbl) from tankers than from platforms and pipelines combined;

- (Page 4-9), "Lease Sale No. 68 could represent a 4 percent increase in spill potential; that is, increase the most likely number of spills from 22 to 23" (For all activities in the Southern California Bight for a 25-year period);
- (Page 4-48), "There are 1.1 spills greater than 1,000 barrels expected from this lease sale and subsequent development" (not qualified by any reference to tanker spills);
- (Pages 4-81 and 4-87), "The risk of a spill would (significantly) increase should oil have to be imported to replace the expected resources from Sale No. 68."
- (Page 4-114), "Sale No. 68 slightly increases the already strong probability that a serious spill could occur.";
- (Page 4-115), "It is assumed that the (Sale 68) crude oil would back out an equal amount of either foreign or Alaskan crude oil.";
- (Page 4-117 and 4-119), "Cancelling...or Delaying the Sale... would eliminate or postpone sale-related impacts. This, of course, assumes that selection of those alternatives would not result in increased oil imports via tankers."
- (Page 8-25), "Sale No. 68 could represent a 4 percent increase in spill potential."

These contradictory statements appear to have their source in the Oil Spill Risk Analysis for Sale No. 68 (POCS Technical Paper 81-2), which states (page 36): "Unfortunately, the manner in which the model is programmed shows Sale No. 68 activity as an increase in spills. The overall results should show a decrease in expected number of spills as the risk involved with OCS development is less than the risk associated with the additional tankering of imported oil if Sale No. 68 does not take place."

In the Final EIS for Sale 68, that badly-flawed computer model should be corrected or discarded. The FEIS should deal directly and consistently with the probability that Sale 68 production would in fact reduce the risk of oil spills in Southern California waters. It should include the present and estimated future shipments of California OCS oil to other states and discuss the reasons for those shipments. And it should estimate future levels of Alaskan oil production and the possibility that much of this might be shipped east by a "Northern Tier" pipeline or similar project.

On another but related aspect, it is very misleading to refer, on page 8-26, to the "cumulative estimate of 23 oil spills (of over 1,000 barrels), approximately one spill per year, in the Lease Sale No. 68 area over the life of the sale" without making absolutely clear that only 1 of the predicted spills would be due to the Sale. The table on page 4-95, listing the chances of

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spills hitting sensitive biological areas, is also misleading for the same reason. It has little or no relation to Sale 68 and would be more appropriate in the section titled "Future Environment Without the Proposal."

POST-SALE ENVIRONMENTAL REPORTS AND REVIEWS

The Final EIS should adequately describe the Environmental Reports which must accompany all Exploration Plans and Drilling and Production Plans for the Pacific OCS. By its complete omission (except for the barest listing on page 8-1) of these post-sale environmental analyses, and of the federal and state reviews and public hearings to which they are subject, the DEIS gives the very misleading impression that the pre-sale EIS process represents the last public or governmental opportunity to address potential environmental or socio-economic impacts related to the sale.

These post-sale Environmental Reports should have been mentioned in each of the following places in the DEIS:

- 1) On page 1-20, where the Exploration Plan and coastal-zone consistency are discussed;
- 2) On page 1-21, where the Development and Production Plan is mentioned;
- 3) On pages 1-29 to 1-32, where past and ongoing environmental studies are tabulated and discussed;
- 4) On pages 1-45 and 1-46, where the contents of these Exploration Plans and Development and Production Plans are described.

In one of these citations, the general content of these Environmental Reports should be described. In addition, their role in U.S.G.S. review and preparation of an Environmental Assessment, and in California Coastal Commission review and consistency hearings, should be discussed.

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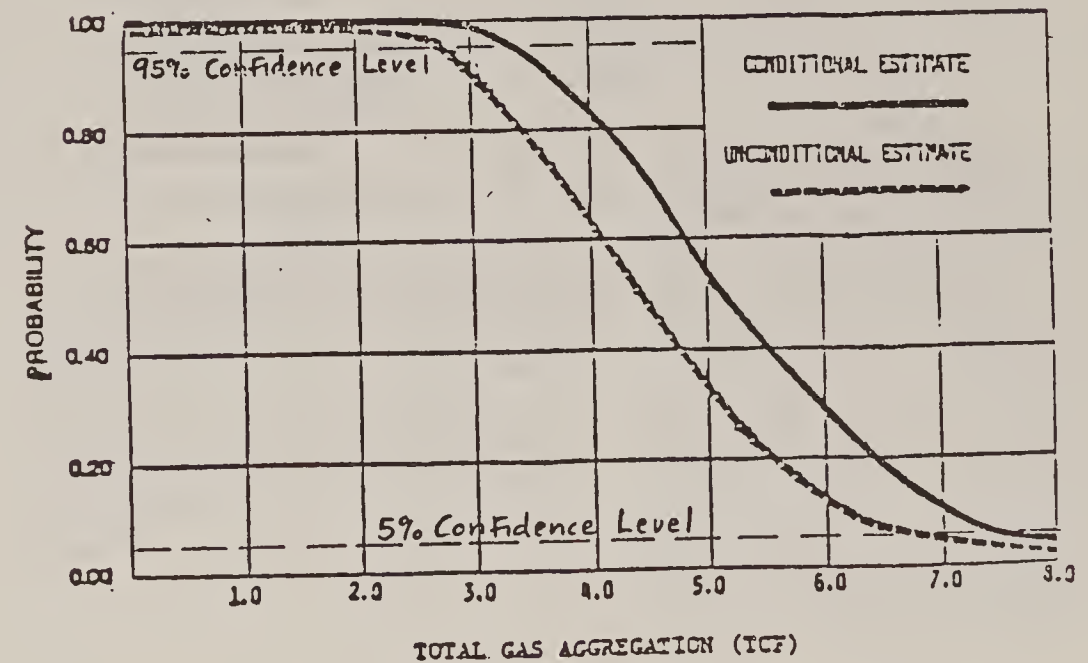
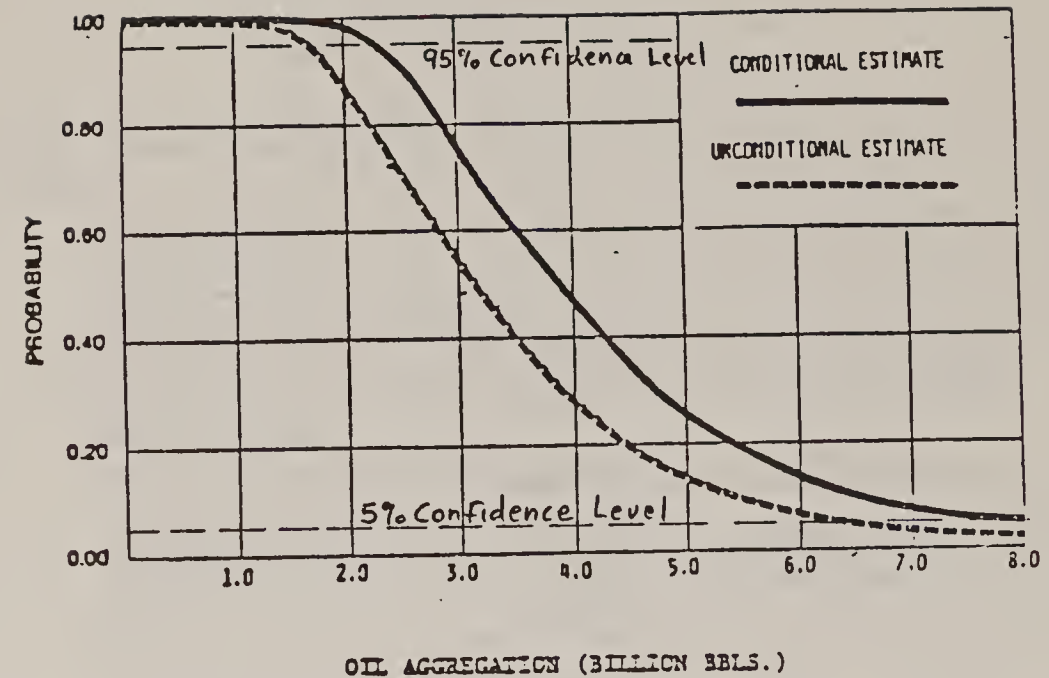


Figure 13. Probability distribution of undiscovered recoverable resources for the entire So. California Borderlands and Santa Barbara Channel (0-2500 m): OCS Sale 58, Southern California.

(From OFR 80-198)

Attachment 1

OCS LEASE SALE NO. 68 - AREA AND RESOURCE STATISTICS

	Total Sale 68	SB Channel	Inner B&B	Outer B&B
Total OCS Acreage	16,640,000	1,350,000	2,400,000	12,900,000
Acres in Sale 68 Tracts	1,112,975	453,815	373,992	285,168
% of Area in Sale	6.7%	33.6%	15.6%	2.2%
Acres Now Under Lease	513,000	433,200	34,200	45,600
% of Unleased Area in Sale	6.9%	59.3%	15.8%	2.2%
Total Undiscovered Oil Resources (billion bbls) - from USGS 80-198, p. 30) (equivalent estimates from USGS OFR 81-192 in parenthesis)				
95% Confidence Level: Risked	1.7	(.2)	(.1)	0 (0)
Cond.	2.2	.5	.6	.4
5% Confidence Level: Risked	6.5	(3.7)	(1.9)	1.4 (2.6)
Cond.	7.6	4.2	2.8	2.8
Mean: Risked	3.6	(1.3)	(.6)	.4 (.5)
Conditional	4.4	1.8	1.4	1.2

Sale 68 Estimated Recoverable Oil (billion bbls)- from DEIS, p. 1-5)

95% Confidence Level (Cond.)	.020	.016	.020
5% Confidence Level (Cond.)	.126	.140	.216
Mean: Risked	.063	.035	.023
Conditional	.067	.070	.093

Attachment 2

Table 3.2

THE DISTRIBUTION OF KNOWN RECOVERABLE OIL RESOURCES OF THE WORLD BY FIELD SIZE
AS OF DECEMBER 31, 1975

Field Size (In millions of barrels)	Number	Amount (In bil- lions of barrels)	Percent of Total
Super-giants (5000 +) ^a	33	512.6	50.7
Large giants (2000-5000) ^a	31	89.3	8.8
Medium giants (1000-2000) ^a	70	90.2	8.9
Small and combination giants (500-1000)	138	84.0	8.3
Potential giants ^{a,b}	153(+)	43.1(+)	4.3(+)
Large non-giants (100-500) ^{b,c}	483(+)	75.2(+)	7.4(+)
Other non-giants (less than 100) ^c		117.1(-)	11.6(-)
Total ^c	33,000*	1,011.5(+)	

^aBecause no estimates of total recovery are available for 30 of the potential giants and some estimates available for the others are likely to be substantially understated, the actual amount in potential giant fields could easily be 25%-50% greater than that shown here.

^bBecause some of the potential giants are likely to prove to be merely large non-giant fields, the amount in large non-giants is somewhat greater than indicated here.

^cNo information on large non-giant fields in China, Eastern Europe, and the Soviet Union could be obtained for this report. The amounts in these fields are therefore included in the amount in other non-giant fields. Transferring them to the large non-giant category would probably increase the amount in large non-giants by 15 to 20 billion barrels and decrease the amount in other non-giants by a similar amount.

SOURCES: See Appendix A, particularly Tables A.1, A.6, A.16, A.28, A.37, A.48, and A.63.

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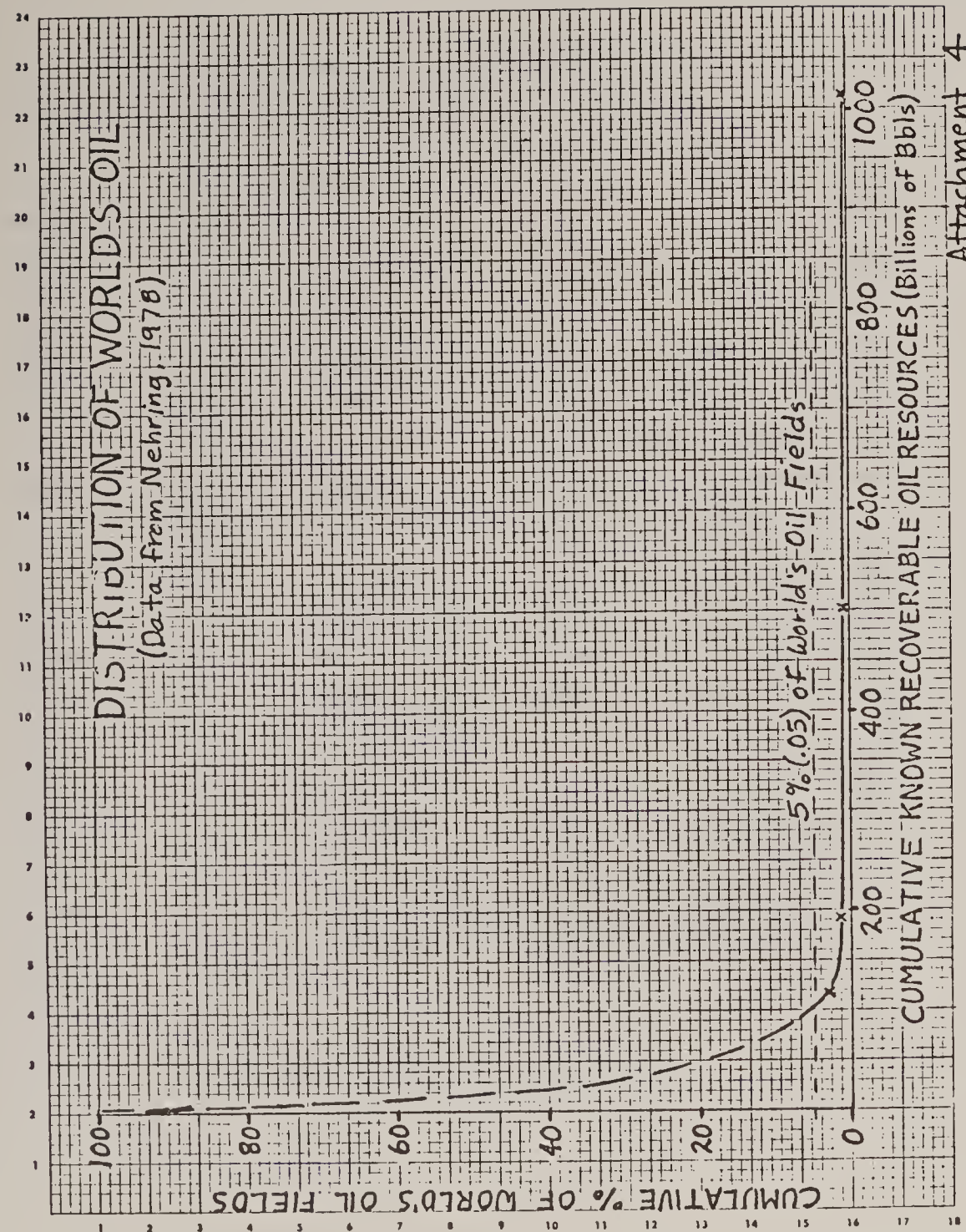
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Attachment 3



DEIS
p 3-104

It is not certain when the California coast was first occupied because worldwide rising sea level has submerged the archaeological remains of those early coastal dwellers. Sea level has varied greatly during recent and Pleistocene times. Sea level may have reached a low of 144 m (472 feet) below present mean sea level (MSL) 40,000 B.P. and 124 m (407 feet) below present MSL 18,600 B.P. This means that much of the early coastal region probably occupied by the earliest Californians is presently submerged, and at great depths in many areas. "Any traces of occupancy of California's coast and the lower reaches of river valleys during the period before 8000 B.P. to 7000 B.P. are likely to be covered over, either on the submerged shelf, or under alluvium deposited when river valleys were drowned by the rising ocean" (Bickle 1978:9).

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SUMMARY

Consequences for Archaeology

Regardless of its import for social evolution, it is clear that the Holocene sea level rise affected the archaeological record. Any traces of occupancy of California's coast and the lower reaches of river valleys during the period before 8000 B.P. to 7000 B.P. are likely to be covered over, either on the submerged shelf (if settlements were not eroded away by the encroaching sea) or under alluvium deposited when river valleys were drowned by the rising ocean.

Changing sea levels have affected human prehistory and archaeology worldwide. Along the California coast, a rise in sea level of about 130 m. in the last 15,000 years has submerged approximately 20,000 km² of land and has created numerous estuaries. These processes have contributed to the destruction or obliteration of archaeological sites, and to population movements resulting in local changes in population density during prehistory. The effects of such population shifts should be considered in analyzing the development of complex social and economic organization among some Native Californian groups. Archaeological features such as site submergence, changing settlement patterns and shifts in diet may be illuminated by consideration of local histories of sea level rise and accompanying effects.

NOTE

Attachment 5

OIL SPILL INCIDENTS OF 238 OR MORE BARRELS

OCS-GULF OF MEXICO

Calendar Year	Incidents	Oil Spilled	Number of Structures	Annual OCS Oil Production
1964	5	14,928 barrels	1,100	115 million barrels
1965	2	2,188 barrels	1,200	136 million barrels
1966	0	None	1,325	175 million barrels
1967	1	160,639 barrels	1,450	206 million barrels
1968	1	6,000 barrels	1,575	250 million barrels
1969	6	30,024 barrels	1,675	285 million barrels
1970	3	83,895 barrels	1,800	312 million barrels
1971	1	450 barrels	1,891	359 million barrels
1972	0	None	1,935	356 million barrels
1973	4	22,175 barrels	2,001	342 million barrels
1974	2	22,046 barrels	2,054	316 million barrels
1975	0	None	2,079	288 million barrels
1976	2	4,300 barrels	2,096	281 million barrels
1977	2	550 barrels	2,248	250 million barrels
1978	0	None	2,327	255 million barrels
1979	1	1,500 barrels	2,420	246 million barrels
Total	31	348,695 barrels		4,172 million barrels

Source: Accidents Connected with Federal Oil & Gas Operations on the OCS, Gulf of Mexico, Vol. I 1956-79, U.S. Geological Survey, Conservation Division, December '79.

Issued: July 1, 1980



1980
PETROLEUM INFORMATION PACKAGE
as of January 1, 1980

Attachment 6

Responses to AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS,
PACIFIC SECTION

- 30.1 The EIS has been revised. When possible, the requested information has been included.
- 30.2 The Index has been revised.
- 30.3 The EIS has been revised as suggested.
- 30.4 Additional subheadings have been added to the EIS. Marine mammals and seabirds have separate subheadings. The brown pelican is now listed in the Index.
- 30.5-7 The geological section in the DEIS, Section III.A.1, has been reviewed relative to USGS Open File Report 80-198. Section III.A.1 has been revised.
- 30.8-9 Section III.A.1 has been revised. A table showing maximum design earthquakes in the sale area is more appropriately supplied in the required Exploration Plans and Environmental Reports which precede activity on a leased tract. Such a table, as has been supplied in the past, would provide information relevant to a detailed exploratory drilling program.
- 30.10 The EIS has been revised as suggested.
- 30.11 The EIS has been revised to include more information on Santa Barbara oil seeps.
- 30.12 Section III.D.1 has been revised.
- 30.13 The description of resource estimation has been clarified in Section I.B.
- 30.14 USGS Open File Report 80-198 is now referenced in Section III.A.1. However, it is not the source for the resource estimates given in Section I.B. Resource estimates for the Southern California area which are given in Open File Report 80-198 should not be compared to the sale area estimates. The methodology used by the USGS Conservation Division in developing estimates is different from that used to calculate sale area estimates. Also, comparison of "conditional" resource estimates may result in erroneous conclusions.
- 30.15 Comment noted.

30.16	See response 30.14 regarding comparison of conditional resource estimates. Note also that resource estimates for sale tracts are not based upon surface area but rather upon prospect size and economic considerations.	30.29	The EIS has been revised as suggested.
30.17	The probability of occurrence of resource estimates for the three subareas has been added to Section I.B.	30.30	Sections II and IV have been rewritten to clarify the assessment of degree of impacts. Some confusion exists as to long-term, short-term, limited extent effects, and effects for the entire lease sale area considered as a unit.
30.18	Previous exploratory drilling of eight wells contributes to our knowledge of the area and results in a fewer number of exploratory wells being included in the exploration scenario. Note also the probability of discovering resources between subareas as discussed in Section I.B.	30.31	Comment noted.
30.19	Correct. The resource estimation referred to is only for Proposed Sale No. 68 tracts within the Channel Islands National Marine Sanctuary.	30.32	The EIS was not revised based upon this comment because the long-term fate of cuttings is really not clear. They may be covered by new sediment or they may be transported away from the site of original deposition by high energy waves or bottom currents.
30.20	Additional information on history of oil and gas development off Southern California is provided in Appendix F of the FEIS and referenced in the body of the EIS. It is not possible to include all supporting information in the body of the EIS or on the visuals.	30.33	Section IV.A.5 has been revised to include a brief description of the major components of drilling muds and cuttings.
30.21	Further information on seismic surveys and drilling have been included in Appendix F and in the body of the EIS.	30.34	The comment is not valid for many formation waters because they may be hypersaline and contain elevated levels of trace metals such as vanadium and nickel. There is also some evidence (although it may not be rigorous) that radionuclides are concentrated in formation water, notably radium isotopes.
30.22	Section II.B has been modified. Historical development data is now provided in Appendix F of the FEIS.	30.35	The comment asks for expansion of the discussion of dilation and dispersion of platform discharges of muds and cuttings. This was done to a great degree by reference to papers presented at the 1980 Drilling Fluids Symposium held at Lake Buena Vista, Florida. The FEIS for Sale No. 53 includes this expanded discussion based upon Symposium papers and was referenced in Proposed Sale No. 68 DEIS. The references have been expanded in the FEIS as suggested.
30.22.a and b	Comments noted.	30.36	The EIS has been revised as suggested.
30.23	The EIS has been revised to reflect the probable increase in onshore operations.	30.37-39	The occurrence of submerged and coastal sites in protected and unprotected areas is well documented.
30.24	Comment noted.	30.40	It is still too early to make blanket statements with regard to submerged cultural resources in terms of the science of marine archaeology. The EIS has been revised.
30.25	A conclusion concerning the expected change in unemployment in Section IV.C was added.	30.41-43	The best available oil spill data for the worst case was used for environment analysis. The Future's Group, a consultant to BLM, is conducting a study on world-wide oil spill data for a statistical base.
30.26	The conclusions in the public facilities and services section are based on the results of the Harris model. The model inputs for direct employment were scaled down by the amount of non-resident employment expected. See POCS Technical Paper No. 81-3.		
30.27	Comment noted.		
30.28	Section IV.C.14 has been revised as suggested.		

This study is expected to be completed in October 1981. In the future, there will be better technology resulting in fewer oil spills and decreased impacts from any spills that do occur. We feel it is inappropriate to change our analysis until the results of this study are known.

30.44 The referenced statements are correct for the specific subjects. The quote from pages 4-81 and 4-87 of the DEIS is incorrect and has been revised in the FEIS.

30.45 The referenced statement in POCS Technical Paper No. 81-2 is incorrect and has been substantially revised. Contrary to the referenced statement: 1) the model is correct in showing that Proposed Sale No. 68 would result in an increase in oil spills, and 2) the overall results should not show a decrease in expected number of spills as the risk involved with OCS development is greater (to the proposed lease sale area) than the risk associated with the additional tankering of imported oil that will be required if Proposed Sale No. 68 does not take place. However, tankers would have a greater volume of oil spilled per expected number of spills.

30.46 If the oil companies decide to transport by tankers the Proposed Sale No. 68 crude oil to other refineries than those that are located in the Los Angeles basin, the expected number of oil spills would be slightly higher.

30.47 Comment noted.

30.48 The EIS has been revised as suggested.

Center for Environmental Education

1925 K Street, N.W. • Washington, D.C. 20006 • 202 466-4996

Director (542)
Bureau of Land Management
Department of the Interior

RE: Comments on the Draft Environmental Impact Statement, Proposed 1982 Outer Continental Shelf Oil and Gas Lease Sale 68

Dear Director,

The Center for Environmental Education has, as a main concern, the maintenance of the biological diversity and ecosystem integrity of the marine environment. It is in expressing this concern that our comments on the "Draft Environmental Impact Statement: Proposed 1982 Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California," 1981, are submitted.

We feel that the preferred alternative presented in the Draft, which includes leasing of 13 full and 24 partial tracts within the Channel Islands National Marine Sanctuary, is a direct threat to the resources of the Sanctuary. The Marine Protection, Research and Sanctuaries Act of 1972, provided a means for the establishment of a marine sanctuary that surrounds the northern Channel Islands and Santa Barbara Island. A prerequisite to Sanctuary designation requires that the proposed area contain distinctive conservation, recreational, ecological, or aesthetic value. Preservation of designated Sanctuaries is the expressed intent of this Act.

That the Channel Islands and their surrounding waters are of incredible value in all of the above mentioned areas is not in question. The vast array and number of species found in this environment is immense. As the Draft states (pg. 2-16):

The unusual and valuable intertidal, subtidal benthos, pinnipeds, seabirds, recreational, and cultural resources were major reasons the area was designated as a National Marine Sanctuary and National Park.

Comments such as:

...the largest and most varied pinniped assemblages in the world...

...a focal point for one of the richest resource areas of marine birds in the United States - based on both numbers and diversity...

This is recycled paper

Page Two

are commonplace descriptions of the biological and ecological value of this area (BLM, Final Environmental Impact Statement, Channel Islands Marine Sanctuary, 1980, Section E). The Center is concerned that this unique, invaluable area will not be preserved according to the intent of the law that created the Sanctuary, but rather degraded by the proposed oil and gas activities slated to occur within its boundaries. The following comments address what we feel are weaknesses in an otherwise well written document.

Planning and Environmental Information

The Draft states (pg. 2-18) that the impacts of Alternative 4, delaying the sale for two years, would be generally the same as for the preferred alternative. This statement might be applicable to the Southern California Bight in general, but potentially significant impacts to the Sanctuary may well be avoided by delaying the sale. The Draft, as do many other documents, repeatedly states that long term low level chronic effects of OCS operations on the marine environment are not well known. Information gaps on these effects are largely due to the lack of well coordinated, peer reviewed scientific studies of them. A recent report by the Committee on the Assessment of Safety of OCS Activities, National Research Council, Safety and Offshore Oil, 1981, page 6 examines this problem:

While there is a large amount of scientific information on the effects of offshore operations on the marine environment, the data have often been acquired piecemeal and often have not been rigorously analyzed. Lack of agreement persists concerning the validity, interpretation and general acceptance of data. Adequate effort has not been directed to using existing data and structuring scientific programs to achieve a consensus on the fate and effects of petroleum, drilling muds, and drill cuttings on the marine environment.

To right the situation, time must be given to developing a widely accepted approach to analyze these impacts. Delaying the sale, at least the sale of tracts within Sanctuary boundaries, may provide the time needed to draw important conclusions about these impacts. The Draft does mention the value of obtaining additional information, but whether this information will become available in time to be a factor in exploration and development plans is highly questionable. Added time is especially valuable if it allows dissemination of sound information and analysis that may influence the fate of invaluable biological environments.

Water Quality

There seems to be a contradiction in the Draft concerning the fate of formation waters produced in drilling operations. On page 4-35 is

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found the statement, "Traditionally, Southern California OCS formation waters have been discharged into the marine environment." On page 4-48 is found, "Formation water is usually reinjected into the oil bearing strata and does not pollute the surrounding water mass." If the latter is the case, the discussion of formation water fates and impacts found in the Draft would seem unneeded. Various studies have established that pollutants capable of degrading water quality, namely hydrocarbons and heavy metals, are found as constituents within formation waters (BLM, Final Environmental Impact Statement, Lease Sale 48, page 1045). Although their fates and effects are not well understood, quite possibly, the toxic effects of formation water pollutants could reduce organism viability, thus altering sensitive community stability within the marine environment.

The discussion of "relative quantities of effluents" (pg. 4-36) is misleading in relation to the Sanctuary. A declaration is made that pollutants from the lease sale will constitute less than 7% of the total pollutant burden released into the Bight by industrial and municipal activities. A small incremental impact to water quality in the general area may be valid, but consideration of impacts to Sanctuary water quality renders this small implied impact invalid.

The Draft (pg. 4-47) tells us that the water quality around the Channel Islands and Tanner-Cortez Banks remains relatively unaffected by impacting agents with the exception of slight elevations in a few trace metals. It clearly follows that pollutants introduced to the marine environment in these areas will have a much greater impact on water quality than nearshore and Channel areas already heavily impacted by municipal and industrial outfalls.

This fact can be applied to the Draft conclusion (pg. 4-48) that, "the impact on water quality, should Alternative 2 be adopted would be the same as described in Alternative 1. Deletion of tracts within the Sanctuary may not significantly reduce impacts to water quality in the Bight, but pollutants generated from activities on these tracts could pose serious threat to the health of the Channel Islands ecosystem."

Oil Spill Risk Analysis

As part of the Oil Spill Risk Analysis Model developed by the United States Geological Survey, the probability of an oil spill occurring and contacting a land segment was determined. A factor in this calculation is the probability of a spill impacting a chosen target assuming a spill has occurred. The "conditional probability" of a spill contacting a chosen target, say the Channel Islands, is a mean probability. Herein lies the problem. The reader is led to believe that the probability of a spill contacting the Channel Islands Marine Sanctuary is low because the mean incorporates very low contact probabilities from spills originating in distant areas of the lease sale. Excepting wind and current direction, contact probabilities are predominantly a function of distance from the target. For example, the mean contact probability for the 13

tracts entirely within the Sanctuary is greater than 99.5% (all automatically impact the Sanctuary if a spill occurs on any of them). The mean probability for the 24 tracts partially within the Sanctuary is 96%, while this probability for the 18 tracts directly adjacent to the tracts totally or partially within the Sanctuary is 73% (These figures derived from USGS Open-File Report 81-605). The reader cannot ascertain the greatly reduced probability of oil spill impacts to the Sanctuary that would accompany the adoption of Alternative 2 unless this information is included in the Draft.

A sidelight to contact probabilities makes itself apparent here. A variable used to develop the probability of spill occurrence is the volume of estimated recoverable resources to be found within an area. Spill risks rise as greater amounts of oil are produced. In calculating this probability for tracts within the Sanctuary, the USGS estimate of 6.9 million barrels of oil resources was used.

On the other hand, oil and gas industry resource estimates for the entire Sanctuary range from 100 million barrels (Declaration of John Cassell, Senior Staff Geologist - Chevron) to 250 million barrels (D.T. Magee, V.P. Western Region - Chevron, memo to Sanctuaries Program Office). Tracts within the Sanctuary, as part of this lease sale, represent the majority of the oil and gas industry's interest in areas within the Sanctuary. Assuming that industry nominates tracts of highest resource potential based on their estimates, spill probabilities on tracts within the Sanctuary would increase dramatically because spill probability calculations would be based on much higher resource estimates.

Enhancement of Long Term Productivity

The Draft, through cumulative impact and short term use versus long term productivity discussions, addresses potential impacts to sensitive environments within the Bight. Even though this issue is addressed, we believe a more far reaching discussion, which extends itself beyond impacts to resources specifically from Lease Sale 68 activities, to a broader perspective of past and future threats to these diminishing resources, is of utmost importance. A valuable addition to the Final Impact Statement for this and future lease sale environmental documents would be an analysis of threats to valuable resources from a long term, future oriented perspective. Only then can the reader perceive the growing pressure being put on the remaining limited number of invaluable resource areas, and thus, the benefits of buffering them from activities that may ruin them.

One may question why productive environments such as the Channel Islands are important. Ecosystem diversity is essential to the maintenance of a stable environment, an environment upon which humankind depends for its survival. In the absence of this biological stability, the forces governing natural process interactions are thrown out of equilibrium. As a result, once highly productive environments lose their capacity to sustain wide varieties of life forms. Already, intense pressures for development of coastal margins have ruined

or degraded a substantial number of uniquely diverse ecosystems. While this pressure shows no signs of decreasing, the value of preserving these productive environments is becoming increasingly apparent.

Viewed independently, potential impacts associated with Lease Sale 68 could well be substantial, but in combination with existing and future hydrocarbon operations on the OCS, the potential impacts from major spills and chronic levels of pollution increase by orders of magnitude. For instance, the number of spills occurring and contacting the Sanctuary jumps from .20 to 3.8 and the probability of a spill contacting the Sanctuary skyrockets from 17% to 98% when probabilities solely from lease 68 are combined with those of lease 48 and other related hydrocarbon activities in the Right.

Future potential impacts will come as a result of newly planned OCS lease sales. The Department of the Interior is in the process of formulating a final five year plan for accelerated hydrocarbon production on the OCS. Included in this program are two additional lease sales, 73 and 80, proposed for offshore California. Their exact locations are not known, but they will bring added pressure on offshore and coastal environments including the Sanctuary. California coastal environments will not be the only areas affected. Many unique marine habitat areas of biological significance on all coastal margins will be pressured by this planned development. In addition, pollution from industrial and municipal sources dumped into offshore waters will further degrade once productive marine environments.

Existing and future pressures on the marine environment, especially over the long term, may push sensitive habitats past their threshold to resist degradation - their value lost to the absence of sensible, far-sighted management. A quote from the House Report accompanying the initial legislation creating the Marine Protection, Research, and Sanctuaries Act of 1972 embodies this concern for long term preservation quite aptly:

The pressure for development of marine resources are already great and increasing (and this was ten years ago!). It is never easy to resist the pressures and yet all recognize that there are times when we may risk sacrificing long term values for short term gains. The marine sanctuaries authorized by this bill would provide a means whereby important areas may be set aside for protection and thus be insulated from various types of development which can destroy them

Oil production activities on the OCS are currently and will continue to be the main type of development which can destroy unique marine resource areas. The potential effect of this type of development has been constantly debated by opposing interests. The earlier mentioned report, Safety and Offshore Oil, states on page 6:

31.9

Scientists agree that spill and discharges at high concentrations of petroleum, drill cuttings, and drilling muds produce an adverse effect on marine biota. There is no clear agreement among ocean biologists as to whether low concentrations of petroleum, drilling fluids, and cuttings produce significant effects on marine biota. Nor is there agreement about the cumulative effects of low levels of discharges or of disturbances caused by drilling operations to natural ecosystems, both being difficult to detect and measure quantitatively. Moreover, the long-term effect of the discharges on an ecosystem or community has not been established adequately. Thus, while there is general agreement that the toxicity and smothering effects of large quantities of oil and drilling fluids and cuttings are harmful to pelagic birds, benthic organisms, and coral reefs, there is less agreement on the ability of those life forms to recover after a time.

With the importance of preserving diverse, unique marine habitats known, it becomes very difficult to qualify any activity(s) that are likely to have adverse effects on these environments. As greater amounts of hydrocarbon production activity occur on the OCS and other human induced sources of pollution enter the marine environment, the probability that highly valuable resources will survive the pressure, continues to plummet.

Value of Forgone Resources is Not Critical

Justification for drilling within the Sanctuary is made on the basis that increasing domestic sources of oil reduce the nation's dependence on foreign imports. If oil and gas industry estimates of 100 million barrels of oil within the Sanctuary are accurate, this volume would supply U.S. demand for, at most, six days.

Not addressed in the Draft is the probability that all the resources within the Sanctuary will be precluded from recovery. A large volume of oil and gas could probably be recovered from within the Sanctuary from wells drilled from outside of its boundary. Many of the tracts partially within the Sanctuary have significant area outside the boundary that would allow vertical and directional well drainage of resources underlying the Sanctuary. Consequently, the magnitude of forgone resources could be considerably less than resource estimates predict.

Resource estimation is an inexact process. One industry spokesman emphasized the fact that resource estimation is "wild speculation at best" (Personal communication - D.E. Clark, Shell Oil Co.). A different source stated, "The conditions prerequisite to the presence

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31.11

Page Seven

of hydrocarbons may look perfect, but there may well be none present" (Personal communication - Manny Livaudais, Atlantic Richfield Co.).

While six days worth of oil, a very questionable assumption in itself, is a contribution to U.S. oil reserves, the National Interest would be served only for a short time. Preservation of the resources of the Channel Islands National Marine Sanctuary and the Channel Islands themselves, would serve the National Interest for many, many years if not forever.

The Center for Environmental Education, supported by some 350,000 members, strongly believes that the benefits of tract deletion from within the Channel Islands Marine Sanctuary far outweigh the possible benefits to be derived from hydrocarbon production within the Sanctuary. The Draft points out the benefits of Alternative 2 throughout the document, but simply states them on page 2-15:

The adoption of Alternative 2 would result in a significant reduction in potential impacts to intertidal and subtidal benthic organisms, marine mammals and seabirds.

The broader issue of preserving biological diversity and ecosystem integrity is not addressed, but obvious is the positive direction in which preservation of the incredible diversity of the Channel Islands and Sanctuary would lead us.

Preservation of the integrity of the Channel Islands Marine Sanctuary and Channel Islands ecosystem represents an opportunity to exercise future oriented, far-sighted decisionmaking. The exclusion of hydrocarbon production activities within the Sanctuary can be exercised, thus buffering the area from present and future impacts, or or these activities will be allowed within the Sanctuary - a reversion back to the insensitive exploitation of the decreasing number of valuable environments that support our existence.

Sincerely,

Ron Lissem

Intern

Attached is a copy of additional comments regarding the partial suspension of regulations for the Channel Islands and Point Reyes National Marine Sanctuaries.

31.12

Center for Environmental Education

1925 K Street, N.W. • Washington, D.C. 20006 • 202/466-4996

July 31, 1981

Dallas Miner, Director
Sanctuary Programs Office
Office of Coastal Zone Management
3300 Whitehaven St, NW
Washington, D.C. 20235

RE: Channel Islands and Point Reyes-
National Marine Sanctuaries; Partial
Suspension of Regulations (46 FR
23924)

Dear Mr. Miner:

The Center for Environmental Education* wishes to comment upon the deferral of the effective date of final rules prohibiting oil drilling operations at the Channel Islands and Point Reyes-Farallon Islands National Marine Sanctuaries (47 FR 23924 and 32014).

Background

Both the Channel Islands and the Point Reyes-Farallon Islands National Marine Sanctuaries were nominated for sanctuary consideration by the State of California. Both proposals underwent extensive review by federal and state government agencies, industry and the public. This lengthy process, lasting more than eighteen months between initial public hearings before the California Coastal Commission to final designation by President Carter, included at least four opportunities for formal review of the proposals by interested agencies, industry and the public. Prior to designation, the Center submitted comments on the Final Environmental Impact Statement on the Channel Islands Sanctuary (Attachment 1) and on both the Draft Environmental Impact Statement (DEIS) and the FEIS for the Point Reyes-Farallon Islands Sanctuary (Attachments 2 and 3). The Center, together with ten other organizations communicated its views on the Channel Islands Sanctuary and specifically the oil drilling prohibitions to former Secretary of the Interior Cecil Andrus (Attachment 4). Throughout the designation process, the Center has maintained that:

- 1) the unusually rich, yet sensitive, living marine resources of both Sanctuaries require protection from the deleterious effects of both catastrophic and routine discharges generated by oil drilling;

*The Center is a non-profit, public organization with more than 350,000 supporters who believe in the maintenance of the biological diversity and ecosystem integrity of the seas and use of marine resources consistent with sound ecological principles.

This is recycled paper

- 2) an oil drilling prohibition is, therefore, required in order to achieve the goals of Sanctuary designation as set out in the designation documents;
- 3) the conservation benefits of an oil drilling prohibition far outweigh the cost to society of foregoing the development and production of any hydrocarbon resources found within sanctuary waters and not recoverable by directional drilling from outside the Sanctuary boundaries.

Throughout the designation process, we have been acutely aware that opponents of the oil drilling prohibitions regarded the prohibitions as a matter of regulatory turf, and not as a matter of locking up known hydrocarbon reserves.

During the resolution of the controversy surrounding the Channel Islands designation, nineteen members of the California House delegation and six members of the House Merchant Marine and Fisheries Committee wrote to Mr. Stuart Eizenstat, Assistant to the President for Domestic Affairs and Policy, in support of the Sanctuary and specifically the oil drilling prohibitions (Attachments 5 and 6). Senators Cranston, Tsongas and Weicker also wrote to Mr. Eizenstat in the same vein (Attachment 7).

During consideration of the Point Reyes-Farallon Islands Sanctuary proposal, the Center joined with 22 other organizations in a letter to Mr. Eizenstat supporting the Sanctuary designation and the oil drilling prohibitions (Attachment 8). Twenty-nine members of the California delegation also wrote to Mr. Eizenstat in support of the Sanctuary and the oil drilling prohibitions (Attachment 9). Local, state and federal agencies, including offices within the Department of the Interior (DOI) supported the oil drilling prohibitions at the Channel Islands (Attachment 10).

It is equally clear from the record that opponents of the oil drilling prohibitions took the ample opportunity allowed them in the designation process to make their views known.

All of these views were incorporated into the decision packages forwarded to the President. It is quite clear, therefore, that the President, the Governor of California and Congress were fully aware of the controversy surrounding the Sanctuaries and the oil drilling prohibitions in particular. President Carter designated the Channel Islands National Marine Sanctuary on September 21, 1980 and the Secretary of Commerce issued final rules pursuant to the designation on October 2, 1980 (45 FR 65198-65206). President Carter approved the designation of the Point Reyes-Farallon Islands National Marine Sanctuary on January 16, 1981 and the Secretary of Commerce issued final rules on January 26, 1981 (46 FR 7936-7941).

On March 2, 1981, the National Oceanic and Atmospheric Administration (NOAA) notified the public that the effective date of the final rules for the four Sanctuaries designated in the previous several months was being amended to March 30, 1981 or the end of the Congressional review period, whichever was later (46 FR 14741). When this period for review of the Sanctuary regulations was about to end, the Department of Commerce (DOC) notified the public (46 FR 19227-19228) on March 30, 1981, that the hydrocarbon prohibitions would be suspended for another 30 days, while NOAA considered whether these regulations were "major," as defined in the President's Executive Order 12291 of February 19, 1981 (46 FR 13193-13198). Apparently no such analysis had been conducted during the previous suspension.

Although a majority of those commenting upon this further suspension reminded NOAA that an economic impact analysis had been conducted on the Channel Islands regulations as part of the FEIS and that NOAA had decided the economic impact at the two Sanctuaries would not be major even under the more stringent criteria of Executive Order 12044 of the previous Administration, NOAA notified the public on April 29, 1981, that the prohibitions at the two Sanctuaries would be suspended until September 30, 1981, while NOAA considered once again whether the prohibitions were major (46 FR 23924). The delay in implementation of the regulations since March 2, 1981 has been based upon the alleged application of E.O. 12291 to the oil drilling prohibitions.

These comments represent the most recent participation of the Center in the process. As demonstrated in our comments upon the March 30, 1981 Notice, the application of E.O. 12291 to the hydrocarbon prohibitions is inappropriate. The April 29, 1981 Notice has not provided more information which might justify the application of E.O. 12291. Indeed, the clear pattern of ignoring previous public comments leads us to conclude that the process being employed by NOAA in this case is not meant to elucidate the impacts of the regulations, but simply to provide time for the Administration to construct some rationale, however tenuous, for the deletion of the regulations. As such, we are forwarding our comments under protest.

Description of the Sanctuaries

The Channel Islands National Marine Sanctuary encompasses those waters within six nautical miles of San Miguel, Santa Cruz, Santa Rosa, Anacapa, and Santa Barbara Islands and Richardson and Castle Rocks. As the final designation documents describe the area:

The Sanctuary is located in an area of upwelling and in a transition zone between cold waters of the California Current and the warmer Southern California Countercurrent. Consequently, the Sanctuary contains an exceptionally rich and diverse biota, including 30 species of marine mammals and several endangered species of marine mammals and sea birds. (45 FR 65203)

The designation document also states that the area had been designated a Sanctuary "for the purposes of preserving and protecting this unique and fragile ecological community" (45 FR 65202). The FEIS for the Sanctuary proposal gives a far more detailed, though hardly exhaustive, description of the living marine resources and other values which the Sanctuary is meant to protect.

The Point Reyes-Farallon Islands National Marine Sanctuary includes those waters extending seaward six nautical miles from the mainland and 12 nautical miles from the Farallon Islands and Noonday Rock between Bodega Head and Rocky Point. As the designation document describes the area:

The Sanctuary includes a rich and diverse marine ecosystem and a wide variety of marine habitat, including habitat for 23 species of marine mammals. Rookeries for over half of California's nesting marine birds and nesting area for at least 12 of 16 known U.S. nesting marine birds are found within the boundaries. Abundant fish and shellfish are also found within the Sanctuary. (46 FR 7939)

The designation document also states that the area had been designated a Sanctuary "for the purposes of preserving and protecting this unique and fragile ecological community" (46 FR 7938). Once again, the FEIS for the Sanctuary proposal gives a far more detailed, if not exhaustive, description of the living marine resources and other values which the Sanctuary is meant to protect.

Both state and federal governments have on several occasions recognized the uniqueness and sensitivity of the areas within Sanctuary boundaries. In the case of the Channel Islands Sanctuary, Congress designated the islands a National Park. The State of California designated the waters surrounding the four northern islands oil and gas sanctuaries in which oil drilling is not permitted. The State has also designated areas around the islands as Ecological Reserves. The State is considering the creation of a number of underwater parks within Sanctuary boundaries.

In the Point Reyes-Farallon Islands Sanctuary, the State has designated six Areas of Special Biological Significance. At the turn of the century, the Farallon Islands' importance to seabirds was recognized with the establishment of the Farallon Islands National Wildlife Refuge. By far the largest portion of the mainland facing on the Sanctuary is part of the Point Reyes National Seashore. In 1978, Congress prohibited oil drilling within 15 statute miles of the Point Reyes wilderness area.

These various previous governmental actions indicate quite clearly a continuing concern about the protection of these unique areas. Full implementation of the Sanctuary designations will complement these earlier measures.

Last but not least, it is easy to lose sight of the beauty, richness and diversity of these areas. We have attached a copy of the book The Living World of the Reef, by Hillary Hauser and Bob Evans, which describes in words and pictures the diversity of living marine resources in the Channel Islands Sanctuary (Attachment 11).

The Need for the Oil Drilling Prohibitions

Oil drilling within the two California Sanctuaries would expose the living marine resources in the area to threats of various kinds. The impact of oil spills can be catastrophic. While the effects of oil spills in the past have been variable in both the short and long term, it is clear that oil spills can substantially reduce benthic and other organisms, including marine mammals and sea birds. A recent study of the site of the spill of crude oil in the Strait of Magellan in 1974 concluded that:

Now that almost seven years have passed since the spill and oil remains in many of the previously heavily oiled areas, it is time to increase the predicted duration of spilled oil on low wave-energy, mixed sand and gravel beaches to some 15 years. While wave action is very limited...persistence may exceed 30 years on this same beach type. Within sheltered tidal flats there is little reason to believe that oil will ever be physically removed from this environment without complete erosion of the entire site (e.g., channel migration)...With less than one percent new growth at the site (a marsh) and little evidence of oil weathering, oil may persist for more than 100 years." (Gundlach, Erich. "Persistence of Metula Oil in the Strait of Magellan Six and One-half Years After the Incident," Final Report Prepared for the National Oceanic and Atmospheric Administration, Office of Marine Pollution Assessment, May 1980, pages 11-12)

At the very least, this study indicates that in some marine environments, crude oil can persist. Since the Santa Barbara Channel is already subject to natural seeps of crude oil, additional and persistent crude could push some organisms beyond their threshold of tolerance. In the case of the Gulf of the Farallons, such persistence of crude could expose organisms to an element in their environment, to which they have not had the chance to adapt, as have the marine organisms in the Santa Barbara Channel perhaps.

Recently, the Committee on the Assessment of Safety of OCS Activities of the National Research Council concluded (National Research Council, Safety and Offshore Oil, 1981, page 6:

Scientists agree that petroleum spills and discharges of high concentration produce an adverse effect on marine biota. There is no clear agreement among ocean biologists as to whether low concentrations of petroleum or drilling fluids and cuttings produce significant effects on marine biota. Nor is there agreement about the cumulative effects of low levels of discharges or of disturbances caused by drilling operations to natural ecosystems, both being difficult to detect and measure quantitatively. Moreover, the long-term effect of the discharges on an ecosystem or community has not been established adequately. Thus, while there is general agreement that the toxicity and smothering effects of large quantities of oil and drilling fluids and cuttings are harmful to pelagic birds, benthic organisms, and coral reefs, there is less agreement on the ability of those life forms to recover after a time.

In its discussion of ocean discharges in connection with oil drilling operations, the NRC Committee concludes that current regulations of the Environmental Protection Agency (EPA), the Bureau of Land Management (BLM), and the U.S. Geological Survey (USGS) are inadequate:

Most regulations focus only on limiting the concentration of effluents. Only the ocean discharge criteria limit the quantity and rate of discharges. The regulations also do not set specific standards for mixing zones. The consequences of this are that variable burdens can be imposed on ecosystems without consideration of the overall effects on those systems. (Safety and Offshore Oil, page 76)

In its discussion of the variable implementation of these regulations the NRC report concludes:

The Environmental Protection Agency, the Bureau of Land Management and U.S. Geological Survey regulations allow for variability among sites and may be adjusted to address special site sensitivities at the discretion of the regional supervisor of the regulatory agency. However, the standards for varying regulatory or permit conditions are often not stated with specificity and are left to the discretion of the regulator involved...Often the application of variation hinges on post-least sale or post-permit surveys or studies, rather than on identification of the special needs including studies of potential effects, before sale or permit issuance. By structuring flexibility as a post-sale or post-permit process, the regulations introduce uncertainty into the operations and the conditions imposed on them. This creates a difficult planning environment for the companies and for those concerned with potential pollution. It may mean that damage will already have occurred before

conditions are imposed. It may also create an agency disincentive for adjusting the regulations post-sale or post-permit. (Safety and Offshore Oil, page 76)

What is more the NRC Committee concludes that the current leasing program cannot address these risks of uncertainty:

Without a sound scientific basis for decision-making about environmental effects, it is not possible to conclude whether the technology now in use to control discharges provides or does not provide adequately for the safety of OCS operations. The leasing program of the Department of the Interior is not structured to establish that scientific basis in a timely fashion. (Safety and Offshore Oil, page 76)

It is quite clear, therefore, that the federal government is far from being able to insure appropriate protection of the living marine resources in both Sanctuaries, unless the oil drilling prohibitions are adopted.

In its discussion of tracts within the Channel Islands Sanctuary which may be offered as part of Lease Sale #68, the BLM seems to acknowledge itself that such an oil drilling prohibition would make sense (BLM, "Draft Environmental Impact Statement: Proposed 1982 Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California," Volume 1, pages 4-96 and 4-96A):

Alternative 2 (deletion of tracts within the Sanctuary) will decrease the risk to resources within the Sanctuary. Deleting the tracts within 6 nm of the islands will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. Also, it would allow more time for oil spill cleanup and containment equipment to be mobilized. The oceanographic conditions off Southern California are fairly good for handling an oil spill. With this additional time, the chances of effectively protecting sensitive marine resources are greatly increased.

Specifically, the seabird, pinniped, and benthic resources would be less likely to be directly contacted by the oil. Even if the oil did reach these resources, there would be less of it; it would be more weathered; and it would be less toxic.

Increasing the distance between OCS development and these resources would also reduce the vessel traffic, human intrusion, and noise generated during exploration and development. Potential disruption of critical breeding and nesting activities for seabirds and pinnipeds would, therefore, be reduced. Also, the risk of damage from platforms and pipelines, to hard bottom subtidal areas, would be eliminated. Lastly, deleterious effects from drilling muds, cutting and formation water would be greatly reduced....

Moderate to high ecological losses are likely to impact several of the most important resources within the Channel Islands National Marine Sanctuary (if tracts within the Sanctuary are leased). Specifically, seabird and pinniped populations are likely to decline in numbers. The diving seabird (for example, pelicans) and fur seals are most vulnerable. However, all the seabird and pinniped species utilizing this area will probably be effected. To a lesser extent, intertidal and subtidal benthic resources are also likely to be deleteriously impacted. To reiterate, some of the key characteristics of the Northern Channel Islands, which were primary factors in having the area designated a marine sanctuary (and a National Park) will probably be significantly altered by cumulative impacts.

Although it might be argued that the DOI has authority under the Outer Continental Shelf (OCS) Lands Act to delete environmentally sensitive areas from lease sales, it is equally clear from the implementation of OCSLA that there is no mechanism for setting aside such areas over the long term. Despite recommendations from the National Park Service and the Fish and Wildlife Service, tracts were leased within the area which is now a Sanctuary in Lease Sale #35 in 1975. Tracts within the present Sanctuary were also considered for leasing in Lease Sale #48 and still others have been considered for sale in Lease Sale #68.

Also, the very purpose of the Marine Protection, Research and Sanctuaries Act (MPRSA) is very different from that of the OCSLA. As the First Circuit Court of Appeals concluded (Commonwealth of Massachusetts v. Andrus (1979) 594 F. 2d 872):

Under the latter Act the emphasis is upon exploitation of oil, gas and other minerals, with, to be sure, all necessary protective controls. Under the Sanctuaries Act, the prime management objectives are conservation, recreation, or ecological or esthetic values.

In summary, our current knowledge about the effects of offshore oil drilling and the current regulatory framework do not provide adequate protection to the living marine resources of the two Sanctuaries. The oil drilling prohibitions at the two California Sanctuaries will fill in these gaps. The final rules accomplish a number of objectives by:

- 1) creating a buffer area providing increased response time for oil spill clean-up efforts;
- 2) increasing the distance between potential spill/pollutant discharge points (i.e., rigs and platforms) and sensitive resource areas thereby allowing for weathering and dilution of contaminants before reaching important marine life concentration areas;
- 3) providing a buffer between noise and visual disturbance and important marine life habitats;
- 4) reducing congestion by additional supply vessels which would otherwise frequent nearshore areas;
- 5) reducing visual intrusion on aesthetic values of the National Park at the Channel Islands and the Point Reyes National Seashore;
- 6) increasing the probability that, if a spill occurs, it can be reached and controlled before drifting to sensitive breeding ground and nesting areas.

These very same benefits, of course, were recognized in the FEIS for the Channel Islands (page F-74) and the FEIS for the Point Reyes-Farallon Islands (page F-58) proposals. We trust that our discussion will reacquaint the Administration with the need and benefits of such prohibitions.

Major Issues

We wish to address in some detail a variety of issues relating to the current review of the oil drilling prohibitions. We will review the deferral in effective date in light of the requirements of the Administrative Procedures Act (APA) and the MPRSA. We shall also address the question of whether the oil drilling prohibitions constitute major regulations under E.O. 12291. We shall also present our own analysis of the cost and benefits of these regulations.

A. Deferral of the effective date of the oil drilling prohibitions violates the APA.

When the regulations issued pursuant to the designation of the two California Sanctuaries were forwarded to Congress, they were described as final rules. The March 2, 1981 Notice referred to the deferral of the effective date as an amendment. Under the APA, an agency engages in rulemaking when it formulates, amends, or repeals a rule (5 U.S.C. Section 551(5)). While the APA does allow some deferral of the effective date of final rules without requiring compliance with the notice and comment provisions, such deferrals are limited in purpose to:

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permit private parties to adjust their conduct in order to new regulations and second, to permit agencies to correct errors and oversights. (Memorandum for the Honorable David Stockman from Larry L. Simms, Acting Assistant Attorney General, dated Jan. 28, 1981)

That the Administration was aware of the limits to deferral of the effective dates of regulations is indicated by a passage from another Justice Department memorandum:

Nevertheless, we believe that a short-term suspension of the effectiveness of a final rule is not the equivalent of an indefinite suspension coupled with a process designed to review the basis for the rule, with a view to establishing a new rule. Although the former seems fairly characterized as a mere extension of an effective date under Section 553(d), the latter should probably be characterized as "agency process for formulating, amending or repealing a rule" for purposes of Section 553(b). (Memorandum styled "Proposed Executive Order entitled 'Federal Regulation,'" authored by Larry L. Simms, dated Feb. 18, 1981)

It is clear that the process in which NOAA is engaged is not meant to permit private parties to adjust their conduct in order to conform to new regulations or to permit agencies to correct errors and oversights. It is clear from the Notices of March 30 and April 29, 1981 that this is not the contemplated purpose of the delay of effective dates. In the March 30 Notice NOAA states:

...those provisions which would directly prohibit or have the effect of prohibiting hydrocarbon development within each Sanctuary will be suspended for an additional period of 30 days during which NOAA will consider whether to further suspend the regulations or make them effective on an interim basis while they are being reconsidered in accordance with Executive Order 12291.

In the April 29 Notice NOAA states:

The Office of Coastal Zone Management within NOAA is suspending until September 30, 1981, those provisions of the regulations issued pursuant to the designations of the Channel Islands and Point Reyes-Farallon Islands National Marine Sanctuaries which would directly prohibit or have the effect of prohibiting hydrocarbon development within each Sanctuary....During this period, NOAA will reconsider the regulations in accordance with Executive Order 12291

Not only has NOAA deferred the effective date of the regulations for far more than a brief period, but it has also based the deferrals on factors other than those allowed by the APA.

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Furthermore, it is not at all clear from the Notices what NOAA contemplates as the end result of this process. One can speculate that should NOAA determine the regulations are "major"--however much such a finding might conflict with the public record--NOAA would proceed to amend the regulations under the APA. Presumably, such an amendment of regulations would require notice and comment. Initiation of such a process after September 30, 1981, would only further aggravate NOAA's violation of the APA regarding the deferral of the effective date of final rules.

NOAA's initial suspension of the hydrocarbon prohibitions was also based upon the argument that the final rules would not be effective until Congress had reviewed the designation of the Sanctuaries for 60 days. This position is based upon Section 1432(b)(2) which states that a designation "shall become effective unless both Houses of Congress adopt a concurrent resolution... which disapproves the designation." During this period, NOAA has no authority to amend its final action. As the MPRSA reads, the only action which the Secretary may take is to withdraw a designation or parts thereof; even then, the Secretary can do so only if Congress has disapproved the designation or parts of it. Of course, this is not the case with the two California Sanctuaries.

If one argues that the regulations should be considered separate from the designation and therefore from Congressional review, then the current suspension is in violation of the APA. Indeed, NOAA itself has argued, in relation to both designations, that the Congressional review period is viewed by the Executive Branch as an encroachment on its powers (45 FR 65199 and 46 FR 7917). Yet, the Administration wishes to apply this very same "report and wait" period to the regulations. This is quite obviously a case of selective application of Executive Branch prerogatives. In the end, the regulations issued for each Sanctuary were effective 30 days after their publication as final rules under the APA.

B. The suspension of the oil drilling prohibitions is "arbitrary, capricious, and an abuse of discretion" and therefore violates Section 10 of the APA.

The oil drilling prohibitions at the two California Sanctuaries were suspended without an adequate notice of basis and purpose. Rather, both the March 30 and April 29, 1981 Notices rely upon E.O. 12291 as providing sufficient explanation of the agency's action. As we shall show, not only did NOAA have every reason for effecting the regulations on an interim basis, but on its face E.O. 12291 does not provide sufficient basis.

The very vagueness of the Notices regarding the suspension of these final rules requires one to speculate as to the agency's motivation and basis for action. Such vagueness violates the APA.

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As a U.S. District Court held (Citizens Association of Georgetown, Inc. v. Zoning Commission of District of Columbia, 477 F., 2d 402 (D.C. Cir. 1973)):

The case for requiring a statement of reasons from an administrative agency is a persuasive one. Those reasons may be crucial in order for the court to know what the agency has really determined, hence what to review. Courts ought not to have to speculate as to the basis for an administrative agency's conclusions; nor can a court "assume without explanation that proper standards are implicit in every act of agency discretion." And, when faced with a complex problem, having widespread ramifications, like that before us today, a court should surely have the benefit of the agency's expertise. Finally, the articulation of the reasons by an agency--for itself and for the public--does afford a safeguard against arbitrary and careless action and is apt to result in greater consistency in an agency's decisionmaking.

In the Court of Appeals for the Fifth Circuit (City Federal Savings and Loan Association v. Federal Home Loan Bank Board 600 F., 2d 681 (5th Cir. 1979)), a situation very similar to the current situation was under consideration:

In some circumstances, however, the record before an agency shows that significant questions were seriously contested. If the agency decision does not address these issues, even a restrained exercise of judicial review is impossible and a remand for clarification is necessary.

The public record amply demonstrates that "significant questions were seriously contested" in the review of the designation and regulations for the two California Sanctuaries. Yet, the Notices on the suspension of the regulations do not allude to this previous controversy, or the resolution of the controversy at the time of issuance of the final rules.

The reference to E.O. 12291 is further weakened as an explanation for NOAA's suspension by the continuing irresolution of the question whether the oil drilling prohibitions are major under the Executive Order. Indeed, as we made clear in our comment on the March 30, 1981 Notice, evidence in the public record clearly indicated that the economic impacts associated with foregoing possible, but unproven, reserves of oil within the Sanctuaries did not meet the lower thresholds of E.O. 12044, which is E.O. 12291's predecessor. We maintain that further suspension of the regulations is simply meant to give the Administration more time to construct a plausible finding that the regulations are major. Simply put, NOAA's explanation of its suspension of the oil drilling prohibitions is conclusory, and no more.

Also, NOAA was not required by E.O. 12291 to suspend the regulations while they were being considered for applicability of the Executive Order. As Section 7(d) of the Order states:

Agencies may, in accordance with the Administrative Procedure Act and other applicable statutes, permit major rules that they have issued in final form as of the date of this Order, and have not yet become effective, to take effect as interim final rules while they are being reconsidered in accordance with this Order, provided that, agencies shall report to the Director, no later than 15 days before any such rule is proposed to take effect as an interim rule, that such rule should appropriately take effect as an interim rule while the rule is under reconsideration.

There is no explanation in the record of why NOAA did not choose to implement the regulations on an interim basis. Indeed, NOAA itself admits that it had previously conducted an economic impact analysis which indicated impacts far below the standards of E.O. 12291. NOAA's suspension of the oil drilling prohibitions can only be viewed as arbitrary, capricious and an abuse of discretion.

C. Consideration of economic factors in relation to regulations implementing a Sanctuary designation ignores the MPRSA and the legislative history of that Act.

In considering the MPRSA in 1971, the House was fully aware of possible conflicts with exploitation schemes and the Sanctuaries Program. Congress, although concerned with this potential conflict, has supported the basic aims of the Sanctuaries Program as embodied in Title III of the MPRSA. The House report issued with the initial legislation concluded (H.R. Rep. 92-361, 92nd Cong. 1st Sess. 15, 1971):

The pressures for development of marine resources are already great and increasing. It is never easy to resist these pressures and yet all recognize that there are times when we may risk sacrificing long-term values for short-term gains. The marine sanctuaries authorized by this bill would provide a means whereby important areas may be set aside for protection and may thus be insulated from the various types of "development" which can destroy them.

In devising a means of resolving the conflicts mentioned above, the Congress quite clearly decided that such issues should be resolved by the President (H.R. Rep. 92-361, 92nd Cong. 1st Sess. 26, 1971):

The consultation process (required by Section 302(a)) is designed to coordinate the interest of various Federal departments and agencies, including the management of fisheries resources, the protection of national security

and transportation interest, and the recognition of responsibility for the exploration and exploitation of natural resources. It is expected that all interests will be considered, and that no sanctuary will be designated without complete coordination in this regard. In any case where there is no way to reconcile competing uses, it is expected that the ultimate decision will be made at a higher level in the Executive branch.

The reasons for designating a marine sanctuary may involve conservation of resources, protection of recreational interests, the preservation or restoration of ecological values, or a combination of any or all of them. It is particularly important therefore that the designation clearly state the purpose of the sanctuary and that the regulations in implementation should be directed to the accomplishment of the stated purpose.

Representative Dingell reiterated this point on the floor when he said (117 Cong. Rec. 31146, 1971):

Let me stress the point that title III is permissive-- it allows the Secretary of Commerce to declare sanctuaries in appropriate cases. We make no attempt to force him to do so. While it is conceivable that the views of future Cabinet officers may differ--and I have heard no suggestions that the present Secretary is overly well disposed to the protection of environmental values at the expense of resource exploitation--it is also clear that the means for resolving these disputes is in the hands of the President, who can instruct the Secretary to withhold sanctuary status from an area....

The consultation process required by Title III is meant to insure that the President is aware of the economic and other costs associated with a Sanctuary designation. Controversies arising between the protective mission of Sanctuary designation and exploitation schemes are to be resolved by the President.

In the case of both California Sanctuaries, the DOI's objections to the oil drilling prohibitions were part of the designation package considered and approved by the President. Indeed, in the case of the Channel Islands Sanctuary, former Secretary of the Interior Cecil Andrus took his objections to the President himself just days before the President approved the Sanctuary designation.

In its discussion of amendments to Title III in 1979, Congress reemphasized that once the President has approved the designation of a Sanctuary, together with its description of values to be protected and activities to be regulated or prohibited, the Secretary

of Commerce is simply to implement the designation. Controversy over economic is to have been resolved by the President. A Committee Report accompanying the amendments stated (H.R. Rep. 96-112 part 2, 96th Cong. 1st Sess., 12, 1979):

Section 5 of the bill amends section 302 of the MPRSA ...which sets out the procedures for designation of marine sanctuaries and for regulation of activities within them. Subsection (f) is amended to specify that the terms of a marine sanctuary designation (which must be included in the document designating the sanctuary) shall include... the type of activities that will be subject to regulation by the Secretary of Commerce in order to protect those characteristics....The amendment to subsection (f) requires the Secretary, after consultation with other interested Federal and State agencies, to issue necessary and reasonable regulations to implement the terms of the designation to control the activities described in the designation....The amendment expressly restricts the scope of marine sanctuary regulations to those types of activities specifically mentioned in the designation document, while current law does not....

The amendment provides for specification before a sanctuary is created of the extent of control which will be exercised within it. While current law requires the Secretary to assume authority for total management of the marine sanctuaries, the amendment provides for more sophisticated techniques, including multiple-use management and partial management. Under the amendment, the degree of management to be used to protect the values for which a marine sanctuary is created would be specified and discussed before the sanctuary is created....

Furthermore, NOAA's own regulations require that the economic value of foregone resources be considered in the decision to designate a Sanctuary. At 15 C.F.R. 922.23(a)(vi), the NOAA regulations state that the decision whether or not to designate a Sanctuary should consider among other things:

The type and estimated economic value of the natural resources and human uses within the area which may be foregone as a result of marine sanctuary designation, taking into account the economic significance to the nation of such resources and uses and the probable impact on them of regulations designed to achieve the purposes of sanctuary designation.

However, once the Sanctuary is designated, the Secretary of Commerce is to implement the designation with regulations which achieve the purposes of the designation. NOAA's regulations regarding the designation process do not call for the application of economic criteria to the regulations implementing a Sanctuary designation. At 15 C.F.R. 922.26(c), the designation process regulations state:

The regulations shall be consistent with and implement the terms of the Designation and shall set forth the limits of human activities within the sanctuary and procedures for the review and certification of permits, licenses or other authorizations pursuant to other authorities. All amendments to these regulations must remain consistent with the Designation.

In summary then, Title III of the MPRSA and NOAA's regulations on the designation process call for the resolution of conflicts between the protection provided by Sanctuary designation and the exploitation of natural resources; this resolution is to be forged in the White House, when the designation package is considered by the President. Given presidential approval of the designation, the consideration of economic factors disappears in the implementation of the designation.

As a result, the current suspension of the oil drilling prohibitions is in violation of Title III of the MPRSA and NOAA's own regulations, because it focuses upon economic consideration of the regulations.

D. The violations of the APA and the MPRSA cited above were motivated by the DOI and the oil and gas industry without regard for the public participation process.

The procedural and substantive irregularities and flaws accompanying the current suspension would leave us wondering what possible motivation might be behind this effort, were the heavy hand of the DOI and the offshore oil and gas industry not so evident. We believe that the discussion of this aspect of the current situation presented by the California Coastal Commission in its comments of June 25, 1981, adequately demonstrates the tendentious nature of the suspension.

Even if one were to accept, against the language and legislative history of Title III of the MPRSA, that economic factors might be considered in the implementation of a Sanctuary designation, the very manner in which the suspension was generated and effectuated is a serious subversion of the public participation process and Congressional and presidential prerogatives.

E. The oil drilling prohibitions do not meet the criteria of Executive Order 12291 for "major" regulations.

Even if one accepts that it is appropriate for NOAA to reconsider economic factors under E.O. 12291, the regulations do not meet the criteria of the E.O. for "major" regulations. Our comments on the Notice of March 30, 1981, demonstrate that not only were the economic impacts considered before, but that the estimated impacts were far below those contemplated now by E.O. 12291. To our knowledge, no new information has become publicly available which would substantially alter the economic analysis presented in the designation process. Furthermore, estimates supplied by the various oil and gas companies are self-contradictory. The recently released DEIS on OCS Lease Sale #68 assumes that the tracts wholly or partially within the Channel Islands Sanctuary contain only three percent of the resources in the entire sale, or approximately seven million barrels of oil and 20 billion cubic feet of natural gas. These estimates are not significantly different from the estimates used in the "worst case" set out in the Economic Impact Analysis for the Channel Islands (Channel Islands FEIS, Appendix 6).

Furthermore, as the attached report by Richard Tinney demonstrates (Attachment 12), the net benefit accrued from any resources which might be foregone under the oil drilling prohibitions are minimal indeed. Also, the areas in which oil drilling would be prohibited under the regulations under review are miniscule in comparison with the area available to the offshore oil and gas industry for exploration (Attachment 13). It is therefore a very questionable assumption, indeed, that the offshore oil and gas industry would lose money even within the Channel Islands or Gulf of the Farallons areas if they were not allowed to drill within the Sanctuaries. This assumption is further weakened by the fact that the offshore oil and gas industry has and will continue to have its hands full just exploring their current leases (Attachment 14).

The net effect of the prohibitions on the economy therefore will be zero. Surely, such a result does not qualify the oil drilling prohibitions as "major" regulations under E.O. 12291.

F. The benefits of the oil drilling prohibitions far outweigh the costs to society.

Even if one ignores the public record and assumes that the oil drilling prohibitions are "major" regulations, a regulatory impact analysis will demonstrate that net benefits accrue to society from the oil drilling prohibitions. It should be understood, however, that such an analysis is little more than "trying to nail jelly to the wall." As the report of the Massachusetts Institute of Technology's Center for Policy Alternatives informed the Senate Governmental Affairs Committee in March of 1980, there will for

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foreseeable future "serious shortcomings in the availability of empirical data on many health and ecological effects, as well as inadequacies in the models used to interpret the data." Also, placing a dollar value on many benefits of regulation is a difficult and value-laden task. These caveats should be enough to discourage reasonable people from relying too heavily on cost/benefit analysis, especially where largely intangible values, such as biological diversity, are concerned, much less the future worth of an ecosystem to the Nation or the world.

It is, therefore, with some hesitation that we offer the attached report (Attachment 15) as a guide to assessing some of the benefits and costs of the oil drilling prohibitions. Above all, it only seems reasonable to assume that the estimates of the value of the limited number of living species evaluated in the report are seriously understated.

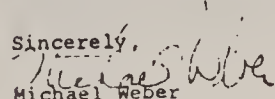
Taken together with the procedural and substantive flaws in the suspension, the conduct of a regulatory impact analysis by the federal government strikes us as a tremendous waste of taxes and a pointless exercise which is only meant to rationalize an arbitrary and capricious effort to deny the living marine resources of the Sanctuary areas the protection which Sanctuary designation requires.

Conclusion

In summary, the continued suspension of the oil drilling prohibitions at the two California Sanctuaries exhibits procedural irregularities and substantive shortcomings which can only be explained as a self-serving attempt by the DOI and the oil and gas industry to subvert the public participation process for their own ends. The very vagueness of NOAA's explanation for suspending the regulations violates the APA and the introduction of economic considerations into the consideration of implementing regulations violates provisions of the MPRSA. Even if one were to assume that the laws of the land had been faithfully carried out in suspending the regulations, it is quite clear from the public record that the regulations are not "major" under E.O. 12291. Nor can the Administration reasonably expect that a regulatory impact analysis will demonstrate anything other than a net benefit to society from the oil drilling prohibitions.

Any further delays in implementing the oil drilling prohibitions will force us to consider judicial remedies to this sordid affair. We trust that a careful reading of the public record, including our previous comments, will reacquaint the Department of Commerce with its duty to effect the oil drilling prohibitions.

Sincerely,


Michael Weber
Marine Habitat Coordinator

- 31.1 Comment noted.
- 31.2 Comment noted.
- 31.3 Comment noted. As indicated in the comment, the EIS addresses this issue.
- 31.4 The discussion is included in the EIS because drillers and producers are allowed to discharge formation water to the open ocean under EPA NPDES permits even though they may have historically reinjected these waters. The toxic effects of formation water constituents are discussed briefly in Section IV.C.1 of the EIS.
- 31.5 The EIS has been revised to make the comparisons of effluent quantities from various sources clearer for regional and local impacts. The EIS has also been revised to clarify impacts under alternative 2.
- 31.6 Section IV.A.1 indicates that the probabilities of a hit on the Channel Islands from tracts just outside the sanctuary are not significantly different from those within the sanctuary. Oil spill probabilities cannot be added as has been done by the commentor without rerunning the oil spill model.
- 31.7 We recognize that the estimated economically recoverable crude oil from the Channel Islands Marine Sanctuary could be higher than that estimated by U.S. Geological Survey; however, for the purposes of environmental analysis we are using the U.S. Geological survey estimate of 6.9 million barrels. As indicated in the EIS, the number of oil spills and related impacts could increase if more oil is found than anticipated.
- 31.8 Comment noted. Refer to Section III.D in the FEIS.
- 31.9 Comment noted. Refer to the cumulative impact sections of Chapter IV.
- 31.10 Comment noted. Also see responses 31.8 and 31.9.
- 31.11 Comment noted. However, most of the oil and gas resources in the Marine Sanctuary may not be recoverable if drilling is excluded because 1) the final regulations concerning slant drilling in the Marine Sanctuary have not been clarified, and 2) the geologic structure may preclude recovery of most of the resources by slant drilling.
- 31.12 BLM has reviewed the information provided and incorporated it into the EIS as appropriate. We understand NOAA's problem relative to this sale and will assist in their analysis, as needed.

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Defenders OF WILDLIFE

August 12, 1981

Mr. William E. Grant
Manager
Pacific Outer Continental Shelf Office
Room 200
1240 West Sixth Street
Los Angeles, California 90017

Re: Draft Environmental Impact Statement
Proposed 1982 Outer Continental Shelf
Oil and Gas Lease Sale No. 68 (Southern
California).

Dear Mr. Grant:

Defenders of Wildlife (Defenders)* submits the following comments in response to the above-referenced Draft Environmental Impact Statement (DEIS). Defenders' primary interest and concern in this particular OCS Lease Sale centers around the proposed Sale's effects upon the recently-established Channel Islands National Marine Sanctuary. As such, the following statements will principally address that issue.

Designation of the Channel Islands National Marine Sanctuary (on September 22, 1980) was accomplished at least in part as the result of an accommodation by the Office of Coastal Zone Management to the wishes of the Department of the Interior and the oil and gas industry. The accommodation involved not only decisions on boundaries, but also on future hydrocarbon development activities within the Sanctuary. The final decision, as you know, incorporates Sanctuary boundaries encompassing waters within six nautical miles around the four northern Channel Islands and Santa Barbara Island. Leases held on OCS tracts lying within these parameters at the time the Sanctuary's final regulations go into effect will be allowed to be developed. However, future oil and gas leases inside these boundaries will not be permitted, according to the terms of the designation.

*/ Defenders of Wildlife is a national, non-profit, tax-exempt organization with a membership of over 54,000 citizens nationwide, and is dedicated to the protection of the nation's wildlife resources and the natural environment.

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You may not know, however, of the very strong support -- including that of the State of California -- which existed for designation of the entire Santa Barbara Channel as Sanctuary. (This concept existed as Alternative 4 in the Draft Environmental Impact Statement for the Sanctuary Proposal). Although Alternative 4 incorporated the entire Santa Barbara Channel from Point Arguello to Point Mugu and 12 nautical miles around the four northern Channel Islands and Santa Barbara Island, its proposed management did not include restrictions or prohibitions on hydrocarbon development activities outside the six nautical mile boundaries around the islands. The State of California's comments are especially noteworthy in that, while they supported the boundaries of Alternative 4, they did not support the notion that existing leases inside the six nautical mile boundaries should be allowed to continue:

While NOAA's preferred alternative proposed a sanctuary boundary of six nautical miles (nmi) around San Miguel, Santa Cruz, Santa Rosa, Anacapa, and Santa Barbara Islands as well as Richardson and Castle Rocks, the Coastal Commission recommends that the boundary be extended to include twelve nmi around the islands and rocks as well as the entire Channel as described in Alternative 4 of the DEIS. The Coastal Commission has adopted this preliminary position in order to focus national attention on the entire Santa Barbara Channel and the Channel Islands as a total ecosystem and on the need for integrated management of the area. The exceptionally rich and diverse concentrations of marine mammals and seabirds found in the waters of the Channel and on the islands and rocks are thoroughly identified and analyzed in the DEIS.

Although the Coastal Commission is recommending that the boundaries of the proposed marine sanctuary be extended, we agree that regulation of oil and gas operations under the sanctuary regulations should encompass only those areas within six nmi of the islands and rocks. The DEIS thoroughly discusses the advantages of keeping oil and gas operations beyond six nmi. These advantages include provision of a buffer area to increase response time for oil spill

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containment and clean-up efforts and weathering, as well as provision of a buffer area between marine life habitats and noise and visual disturbances from oil and gas activities.

The Commission does not agree, however, with the preferred alternative recommended in the DEIS and the proposed regulations which permit oil and gas operations (both exploration and development) under existing leases within a six nmi of the islands. *

(Emphasis added.)

Support for Alternative 4 (or other expanded boundary configurations) also came from many local, State, and national organizations, notably the City of and the County of Santa Barbara. The basic premise of these groups was the perceived need to consider the entire area as an inter-related and inter-dependent ecological unit.

In responding to these views in the Final Environmental Impact Statement, the Office of Coastal Zone Management (OCZM) took into account both the value of biological and hydrocarbon resources, as well as its own ability to adequately manage a larger Sanctuary area:

The marine sanctuary proposal emphasized first and foremost the existence of special resources, worthy of national attention and preservation. The nearshore Island waters contain the most intense concentration of valuable biological resources within the larger [Alternative 4] area. The use of the nearshore Island waters by seabirds and marine mammals appears to be qualitatively different than their use of other waters of the Channel, although assuredly the birds and mammals do range beyond the 6 nmi boundary.

*/ Letter to Ms. JoAnn Chandler, Office of Coastal Zone Management, from Michael L. Fischer, California Coastal Commission, February 1, 1980, pp. 1-2.

While this larger sanctuary might also benefit from management activities, the impact of the program would be diminished. Limited program resources for research, monitoring, surveillance and enforcement would be spread over a much greater area. The benefit to the expanded sanctuary would be less than that for a smaller management area.

With respect to regulatory alternatives, since the expanded boundary includes an area of variable resource concentration and an area which is presently heavily developed and proposed for expanding development, overall prohibitions of activities beyond those already discussed for the 6 nmi area were rejected. That is, even should a large sanctuary be designated, NOAA concluded that only the nearshore Island waters, where development is minimal and resources concentrated, should reasonably be subject to prohibitory regulations. In the nearshore zone prohibitions such as those restricting discharges, activities on new hydrocarbon leases, and certain vessel operations and overflights can add to the protection available for the resources without imposing unacceptable costs. The level and diversity of economic development, in combination with the dispersed resources, renders prohibitions inappropriate in the larger area.*

This final rationale, which holds that nearshore Island waters should "reasonably be subject to prohibitory regulations," has also been supported in the past by California's implementation of its Public Resources Code §6871. Pursuant to that statute, the California State Legislature has established oil and gas sanctuaries in waters within three nautical miles around the northern Channel Islands.**

*/ Final Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, Office of Coastal Zone Management, May 1980, pp. F-151 through F-153.

**/ Ibid., p. F-24. Also included in the State's designation were Santa Catalina and San Clemente Islands.

Such designations prohibit petroleum development in those areas.*

Thus, throughout the development process for the Channel Islands National Marine Sanctuary, particularly strong concern was evident for those nearshore Island waters. The most pertinent point, however, to the OCZM's final boundary and regulatory decisions with respect to the currently-proposed OCS Lease Sale, is that a critical compromise was reached on future OCS development in this area. That compromise, reached over a year ago, fairly and equitably recognizes this country's need to increase domestic production of offshore oil and gas reserves, and fairly and equitably balances that need with the equally important goal of protecting the unique ecological, commercial, recreational, and aesthetic values of the Santa Barbara-Channel Islands area.

Nowhere in the DEIS is this point acknowledged or even noted. There is thus a certain arrogance inherent in the BLM's "proposed alternative 1," which includes 37 tracts occurring either fully or partially within the Channel Islands National Marine Sanctuary. At best, the BLM's proposal demonstrates a careless indifference to the notion of reasoned and balanced uses of the Outer Continental Shelf. At worst, perhaps, the BLM exhibits a total disregard for the more than two-year process required to finally designate a discrete ocean system of outstanding yet vulnerable resources.

Whatever the BLM's rationale for including these tracts in the proposed Sale, it cannot be justified by the value of anticipated recoverable petroleum reserves from those tracts. As the DEIS notes:

"These tracts total approximately 38,000 hectares (94,000 acres), which is only 8.4 percent of the total proposed offering. Less than 3 percent of the total oil and gas resources estimated for the entire proposal, are located within the sanctuary." (p. 2-12)

Three percent of the total estimated oil and gas reserves in this proposed sale equals the following amounts:**

6.90 million barrels of oil in 37 affected tracts
230.00 million barrels of oil in total sale

*/ Leasing can occur if the State's proprietary interest in these areas' oil and gas deposits is threatened via draining by wells located on adjacent Federal OCS lands. A decision to open these State sanctuaries must be individually made by the State Lands Commission.

**/ These figures are based upon the "conditionally mean" (or optimum) estimates provided in Table I.B.1.b-1, on page 1-5.

19.86 billion cu. ft. of gas in 37 affected tracts
662.00 billion cu. ft. of gas in total Sale.

Moreover, although the entire Santa Barbara region is estimated to contain 1.50 billion barrels of oil and 1.70 trillion cubic feet of gas, those total reserves still are estimated to equal only 3.9% of the total energy equivalent of oil and gas resources estimated to be present on the entire Outer Continental Shelf.* As a matter of perspective, therefore, the estimated reserves in those 37 tracts are truly negligible.

Nor can the BLM justify inclusion of these tracts based upon industry's interest in developing them. During the Call for Nominations for this Sale, tracts fully or partially within the Sanctuary received limited positive response from industry. Of 110 such tracts, 20 received "high interest" responses; 10 received "moderate interest" responses; 26 received "low interest" responses; and 54 received no industry response at all.** This response is also indicative of past leasing history in the area. Although the Santa Barbara Channel has been extensively developed, history significantly indicates little industry interest in developing tracts near the Sanctuary area. Out of nineteen tracts leased within Sanctuary waters during Lease Sales 35 and 48, none were ever developed beyond exploratory phases; all nineteen leases were, in fact, allowed to expire. Of the seven tracts that were explored, only one well out of 35 revealed any significant hydrocarbon reserves. The renewed offering of tracts inside the Sanctuary thus makes little, if any, sense from the standpoint of industry interest.

Finally, the BLM's rationale is most seriously flawed by premising the reasonableness of leasing these 37 tracts upon the current suspension of final regulations at Channel Islands National Marine Sanctuary. The DEIS makes scant note of the regulatory suspension (pp. 3-74 and 8-11) but comments that "depending upon the results [of an analysis of sanctuary regulations], drilling may or may not be allowed within the boundaries." (p. 3-74).

As Defenders and many others have made clear to the OCZM, the suspension action (applicable to both Channel Islands and to Point Reyes-Farallon Islands National Marine Sanctuaries) was accomplished on totally faulty procedural grounds.*** The

*/ FEIS on the Proposed Channel Islands Marine Sanctuary, p. E-61.

**/ Ibid., Appendix 6: "Analysis of the Economic Impacts of the Proposed Channel Islands Sanctuary Regulations," p. 26.

***/ A copy of Defenders' comments on this matter is enclosed for your reference.

mandates of Executive Order 12291 are not, in Defenders' view, applicable to the regulations restricting or prohibiting hydrocarbon development at both Sanctuaries. OCZM's actions, however, are the result of the improper and undue influence of the Secretary of the Interior.

This belief is additionally shared by Congressman John L. Burton (D-Calif.), who, based upon the findings of a Congressional Research Service (CRS) study, has charged that Interior Secretary James J. Watt is the "lead conspirator behind the administration's illegitimate acts" of suspending the hydrocarbon prohibitions at both Sanctuaries.* The result of these acts has been the maneuvering of OCZM into an unjustified compliance with the Executive Order's mandates, which include a "regulatory impact analysis" of the restrictions or prohibitions at issue.

The BLM should not, in any way, assume this temporary suspension is: a) legal, or b) going to result in a permanent deletion of those regulations. The public record of support for both Sanctuaries and their regulations is too overwhelmingly apparent to allow the jeopardy of both areas' resources for possibly a few days' energy supply. The BLM, in fact, should take careful notice of the recent decision by the Secretary on the four northern basins proposed for leasing in OCS Lease Sale #53. The "chilling effect" cited by Mr. Watt** of a federal judge's order of permanent injunction against leasing of 29 tracts in the Santa Maria Basin is the direct result of California's strong dedication to reasonable and balanced use of the OCS. That sentiment is no less strong concerning drilling activities inside the boundaries of the Channel Islands National Marine Sanctuary.

In discussing the impacts of deleting these 37 tracts from the Sale, the DEIS itself presents compelling arguments for doing so:

The adoption of Alternative 2 [deletion of 13 complete and 24 partial tracts] would result in a significant reduction in potential impacts to intertidal and subtidal benthic organisms, marine mammals and seabirds. Potential impacts to recreational and cultural resources would be reduced slightly.

*/ News Release of Congressman John L. Burton, "Burton Says Library of Congress Study Shows Watt Masterminded Illegitimate Actions in Lifting Marine Sanctuary Oil Drilling Bans," August 3 1981. A copy of this News Release is enclosed.

**/ "Watt Retreats on Oil Drilling Off Northern California Coast," The Washington Post, August 8, 1981, p. A1.

Deleting the tracts within 6 nm of the islands will increase the time required for spilled oil to reach shore by at least 4 to 5 hours, possibly by as much as 10 hours. During this time, a significant amount of evaporation, dissolution and weathering of the oil would occur, reducing the quantity and toxicity. Also, it would allow more time for oil spill clean up and containment equipment to be mobilized. The oceanographic conditions off Southern California are fairly good for handling an oil spill. With this additional time, the chances of effectively protecting sensitive marine resources are greatly increased. Specifically, the sensitive intertidal and nearshore subtidal resources and the pinniped and seabird resources would be less likely to be directly contacted by the oil. Even if the oil did reach these resources, there would be less of it; it would be more weathered; and it would be less toxic.

Increasing the distance between OCS development and these resources would also reduce the vessel traffic, human intrusion and noise generated during exploration and development. Potential disruption of critical breeding and nesting activities of seabirds and pinnipeds would, therefore, be reduced. Also, the risk of damage from platforms and pipelines, to hard bottom subtidal areas, would be eliminated. Lastly, deleterious effects from drilling muds, cuttings and formation water would be greatly reduced.

Potential impacts to recreational boating, fishing and diving within the sanctuary will be reduced by adopting Alternative 2. Cultural resources will not be subjected to the jeopardy of exploration and development activities (see Section IV.C.19).

It is important to note that these unusual and valuable resources (intertidal, subtidal benthos, pinnipeds, seabirds, recreational and cultural) were major reasons the area was designated as a National Marine Sanctuary and a National Park. Adopting Alternative 2 (deleting tracts within the sanctuary) would help maintain the characteristics and qualities that were prime reasons for designating the Northern Channel Islands as a National Marine Sanctuary and a National Park.

(pp. 2-15 through 2-16)

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These statements are essentially repeated at the conclusion of Chapter 2: "Alternatives Including the Proposed Action" (pp. 2-30 through 2-31), and again at Chapter 4: "Environmental Consequences" (pp. 4-96 through 4-96a). The discussion of cumulative impacts of the proposed action on the Sanctuary (p. 4-96a) is especially persuasive for tract deletion:

...Moderate to high ecological losses are likely to impact several of the most important resources within the Channel Islands National Marine Sanctuary. Specifically, seabird and pinniped populations are likely to decline in numbers. The diving seabird (for example, pelicans) and fur seals are most vulnerable. However, all the seabird and pinniped species utilizing this area will probably be effected [sic]. To a lesser extent, intertidal and subtidal benthic resources are also likely to be deleteriously impacted. To reiterate, some of the key characteristics of the Northern Channel Islands, which were primary factors in having the area designated a marine sanctuary (and a National Park) will probably be significantly altered by cumulative impacts.

The above impacts, coupled with the small (and questionable) amounts of petroleum reserves to be foregone by deletion, renders any hesitancy for adoption of "Alternative 2" totally without reason. Defenders notes that adoption of Alternative 2 is, in fact, foreshadowed by the statements of the U.S. Fish and Wildlife Service, in its Section 7 Biological Opinion conducted in connection with this Sale:

BLM has indicated that a reduction in the number of tracts offered in Lease Sale No. 68 can be expected before the actual sale takes place. Included within such a reduction would be 11 complete tracts and portions of 26 others which are contained within the Channel Islands National Marine Sanctuary because leasing would conflict with the sanctuary status.

(p. 8-11)

In conclusion, there is no justification -- economic or procedural -- for BLM's current proposed action. Defenders urges in the strongest manner possible that BLM heed the arguments of common sense and reason by modifying the sale so as to incorporate "Alternative 2" as the proposed action.

Sincerely,

Sherrard Coleman Foster
Sherrard Coleman Foster
Marine Issues Specialist

Mr. Dallas Miner
Director
Sanctuary Programs Office
Office of Coastal Zone Management
3300 Whitehaven Street, N. W.
Washington, D. C. 20235

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RE: Continued Suspension of Final Rules: Channel Islands and Point Reyes-Farallon Islands National Marine Sanctuaries (15 CFR Parts 935 and 936), 46 Federal Register, No. 82, page 23924, April 29, 1981.

Dear Dallas:

Defenders of Wildlife (Defenders) submits the following comments in response to the above-referenced continued suspension of final rules. Those rules, as you know, have either the direct or indirect effect of prohibiting hydrocarbon development operations within both the Channel Islands and the Point Reyes-Farallon Islands National Marine Sanctuaries.

At the outset, Defenders states its continuing and strong opposition to this action by the National Oceanic and Atmospheric Administration (NOAA). It is disheartening indeed to witness this intended undoing of all that these Sanctuaries were meant to be. The final designation of both Sanctuaries was the result of a careful, comprehensive process spanning over two-and-a-half years. Both Sanctuaries represent, in every manner conceivable, an appropriate balance among varied and numerous interests in two discrete Outer Continental Shelf (OCS) areas -- not the least of which is the continued vitality of the multitude of marine species dependent upon these waters. Defenders' opposition is therefore voiced on several grounds, both procedural and substantive. This organization

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further believes that the discussion which follows argues unquestionably for the immediate and permanent implementation of the regulations in question.

I. Suspension Pursuant to Executive Order 12291.

NOAA initially suspended these same regulations (15 CFR §§ 935.6, 935.7, and 936.6) on March 30, 1981. (46 Federal Register, No. 60, p. 19227). At that time, NOAA stated that these regulations would be suspended for a 30-day period, during which a decision would be made on whether to further suspend the regulations beyond April 30, 1981, or to make them effective on an interim basis while they were being reconsidered in accordance with Executive Order 12291 (E.O. 12291, or Order).

The suspension action was taken pursuant to the immediate mandates of § 7(a) of E.O. 12291, and was accomplished without the normal public review period being applied. Section 7(a) of that Order states:

(a) To the extent necessary to permit reconsideration in accordance with this Order, agencies shall, except as provided in Section 8 of this Order, suspend or postpone the effective dates of all major rules that they have promulgated in final form as of the date of this Order, but that have not yet become effective. [Emphasis added.]

As Defenders stated in its comments submitted in response to this action,* NOAA's actions to suspend the regulations pursuant to this language imply that a determination has previously been made that the regulations in question are, by definition of the same Order, "major rules." However, NOAA proceeded to explain in the same March 30 notice that the regulations were, in fact, being suspended in order to determine whether they actually

* Letter to Dr. Nancy Foster, Office of Coastal Zone Management, from Sherrard Coleman, Defenders of Wildlife, April 14, 1981, p. 2.

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met the criteria listed in E.O. 12291 for "major rules." Those criteria are stated as follows:

§ 1(b) "Major rule" means any regulation that is likely to result in:

- (1) An annual effect on the economy of \$100 million or more;
- (2) A major increase in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions; or
- (3) Significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

It was clear then, as it is now, that the suspension of these regulations proceeded on faulty procedural grounds.

A determination as to whether these regulations are "major rules" must be made prior to any action to suspend them pursuant to E.O. 12291. NOAA has suspended these regulations in order to make such determination, and further has done so on the basis of a presumed authority in E.O. 12291. As has been shown above, E.O. 12291 does not authorize such suspension without a prior determination of "major rule" status having been made. Since no other legal authorities are referred to in NOAA's notices, the suspension of these regulations was legally improper.

It should also be noted, albeit in retrospect, that § 7(a) also says that major rules shall be suspended or postponed "to the extent necessary to permit reconsideration in accordance with this Order." To Defenders' knowledge, there has been no explicit finding by NOAA of the "necessity" to suspend these regulations. Since the putting into effect of these regulations would have had no immediate consequences (i.e., there were no plans for hydrocarbon development activities pending within either Sanctuary's boundaries, other than those few tracts leased prior to the

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designation of Channel Islands), there could not have been any necessity for their suspension. Assuming, which Defenders does not, that E.O. 12291's mandates were applicable to certain of the Sanctuaries' regulations, NOAA could have (and should have), at a minimum, put the regulations into interim effectiveness until reconsideration was completed. This could have been accomplished by applying Section 7(d) of the Order, which states:

(c) Agencies may, in accordance with the Administrative Procedure Act and other applicable statutes, permit major rules that they have issued in final form as of the date of this Order, and that have not yet become effective, to take effect as interim rules while they are being reconsidered in accordance with this Order, provided that, agencies shall report to the Director, no later than 15 days before any such rule is proposed to take effect as an interim rule, that the rule should appropriately take effect as an interim rule while the rule is under reconsideration.

NOAA chose not to take this more logical path. The instant notice of continued suspension notes that "the comments received [in response to the initial March 30 suspension] were divided fairly evenly on the issue [of interim effectiveness versus continued suspension]. Generally those that favored the regulations on substantive grounds during previous review processes, e.g., the State of California, the County of Santa Barbara and various environmental groups, favored making them effective on an interim basis. Those that opposed the regulations, e.g., the oil industry and the Department of the Interior favored continued suspension." Given the overwhelming support these Sanctuaries and their hydrocarbon restrictions received during the designation processes, the veracity of NOAA's assertion is, at best, a bit stretched. To further state, however, that the agency "finds no advantage to changing the current status of the regulations to interim final status" is specious indeed. The original and intended status of the regulations is not one of suspension. Moreover, as the California Coastal Commission has noted, con-

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tinued suspension will in fact be disadvantageous, because such uncertainty regarding the scope of regulation "will only fuel the controversy surrounding the OCS program."*

NOAA has now made a bad situation worse by its decision to further suspend the regulations until September 30, 1981. Somewhat incredibly, the continuation of this suspension is being accomplished for the same reasons as were cited by NOAA last March. That is, the current Federal Register notice states:

"... NOAA will be re-examining them [the regulations] in light of Executive Order 12291 (46 FR 13193, February 19, 1981), and determining whether the prohibitions meet the criteria for 'major' regulations and, in any event, whether they are consistent with the general requirement of Section 2 of this Executive Order including the requirement that the potential benefits to the Nation outweigh the potential costs."

Thus, the situation appears to be that NOAA will continue to determine whether the regulations are "major rules," and at the same time will also determine those regulations' consistency with Section 2 of E.O. 12291. Determining regulatory consistency with Section 2 requires the preparation of a "regulatory impact analysis," as described in Section 3. During the pendency of all of these improperly applied and mistimed determinations, those regulations specifically developed to ensure reasonable protection to the Sanctuaries from the potentially adverse effects of hydrocarbon development activities remain in limbo.

The confusion surrounding the status of these regulations has largely been created by NOAA's own lack of appropriate response early on in this regulatory review process. Support for such an appropriate response by NOAA could, in fact, have been found in the stated purposes

* Letter to Dr. Nancy Foster, Office of Coastal Zone Management, from Michael L. Fischer, California Coastal Commission, June 25, 1981, p. 2.

of E.O. 12291:

" . . . to reduce the burdens of existing and future regulations, increase agency accountability for regulatory actions, provide for presidential oversight of the regulatory process, minimize duplication and conflict of regulations, and insure well-reasoned regulations,"

Had NOAA properly weighed these purposes against the purposes of the Sanctuaries' regulations, it would have found there was absolutely no basis for the suspension actions. Suspension and re-examination actions, in fact, will directly defeat E.O. 12291's purposes. A brief review of each purpose reveals this:

- ". . . to reduce the burdens of existing and future regulations." The hydrocarbon restrictions for each Sanctuary were established for a discrete area of the OCS. They apply only to those areas, and do not conflict with the regulatory activities of the Department of the Interior (DOI) in other areas of the OCS. There is no overlapping of authority between NOAA and the DOI in this area. It cannot be said, therefore, that the Sanctuaries' regulations increase the burden of existing or of future regulations.
- ". . . [to] increase agency accountability for regulatory actions." The rulemaking process required for the designation of a National Marine Sanctuary is certainly one of the most exhaustive procedures within government. No step in that process proceeds without input from all levels. Final designation requires approval from the State, from Congress, and from the President.
- ". . . [to] provide for presidential oversight of the regulatory process." This purpose is plainly achieved by all Sanctuaries, since the President is required to finally approve any designation.
- ". . . [to] minimize duplication and conflict of regulations." As discussed above, duplication and conflict of regulations do not exist in the Sanctuaries' regulations as promulgated in their final form.
- ". . . [to] insure well-reasoned regulations." There is probably no other rulemaking process in the Federal government more comprehensively equitable than the National Marine Sanctuary designation process. From the initial nomination letter to the finalization of a management plan, the multi-year process insures the most reasoned of regulations.

Therefore, NOAA's suspension and re-examination activities will, in reality, serve only to frustrate and delay the attainment of E.O. 12291's purposes.

II. Regulatory Impact Analysis Pursuant to Executive Order 12291.

Having erroneously applied the "major rule" criteria to the Sanctuaries' regulations, NOAA has also erroneously accepted the Order's mandate to perform a "regulatory impact analysis" upon those same regulations. Just as there is now basis for suspension absent a prior determination of "major rules," neither is there basis to conduct a "regulatory impact analysis" absent that same prior determination.

Section 3 of the Order states the following:

- (a) In order to implement Section 2 of this Order, each agency shall, in connection with every major rule, prepare, and to the extent permitted by law consider, a Regulatory Impact Analysis.
- (b) Each agency shall initially determine whether a rule it intends to propose or to issue is a major rule, provided that, the Director, . . . shall have the authority, . . . to prescribe criteria for making such determinations, to order a rule to be treated as a major rule, and to require any set of related rules to be considered together as a major rule.
- (c) . . . agencies shall prepare Regulatory Impact Analyses of major rules and transmit them, . . . to the Director as follows:
 - (1)
 - (2) With respect to all other major rules, the agency shall prepare a preliminary Regulatory Impact Analysis, which shall be transmitted, . . . to the Director. . . and a final Regulatory Impact Analysis

It is particularly noteworthy that Section 3(b) of the Order explicitly required an initial determination of whether a rule is "major" or not. By NOAA's own admission, this determination has not yet been made. Thus, unless such determination is specifically made by the Director of the Office of Management and Budget (Director), there is no authority

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within E.O. 12291 to perform a "regulatory impact analysis." Further, there has been no statement from NOAA that the Director has ordered these regulations to be considered "major rules."

Simply stated, no actions pursuant to E.O. 12291 may proceed without an initial determination of "major rule" status. As Defenders has stated in its earlier comments on this matter, the regulations at issue do not meet any of the criteria listed in Section 1 of the Order for defining major rules. By NOAA's assessment, the only criterion which could possibly apply to the Sanctuaries' regulations is the first: a regulation likely to result in "an annual effect on the economy of \$100 million or more." Based upon the well-documented data which NOAA established and the public supported during the designation processes, there is absolutely no question regarding the necessity of a regulatory impact analysis. Such analysis has, in fact, already been done, and duplication of effort is neither desirable nor necessary. It is particularly distressing that NOAA has failed to acknowledge this public record on both Sanctuaries during its deliberations regarding E.O. 12291 compliance. That strong public support included support for the regulations deemed necessary to ensure the Sanctuaries' integrity and success.

Previous compliance with the regulatory impact analysis requirement is abundantly clear in the case of Channel Islands National Marine Sanctuary. Such compliance has also implicitly been accomplished at the Point Reyes-Farallon Islands National Marine Sanctuary.

A. Channel Islands National Marine Sanctuary. The Final Environmental Impact Statement for the Channel Islands Marine Sanctuary has included an Appendix 6: "Analysis of the Economic Impacts of the Proposed Channel Islands Sanctuary Regulations." This analysis, indepen-

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dently contracted to the Sterling Hobe Corporation, was developed largely in response to oil industry comments that the Draft Environmental Impact Statement did not adequately consider the economic impacts of hydrocarbon development restrictions or prohibitions at Channel Islands. Among the findings of that analysis are the following pertinent facts:

The oil and gas industry has indicated little interest in developing tracts leased during two previous OCS Lease Sales, #35 and #48. Out of nineteen tracts leased within Sanctuary boundaries, none have been developed beyond the exploratory phase. Seven of the 19 tracts were explored; but only one well out of 35 indicated any significant level of hydrocarbon reserves. Initial industry interest in the forthcoming OCS Lease Sale #68 resulted in "moderate to high interest" responses on 30 of 110 tracts referred to during the Call for Nominations.*

Industry response is inescapably a direct reflection of U.S. Geological Survey (as well as industry's own) estimates of reserves in the Channel Islands area. Appendix 6 notes that these estimates have dramatically declined as more knowledge of the area's hydrocarbon resources has become available.** Additionally, it is important to note that the economic impact analyses of hydrocarbon prohibitions at Channel Islands presented in Appendix 6 are based on figures which double the reserves estimated to be actually present in the area. Even assuming these figures, the annual loss to the economy (both direct and indirect

* Final Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, Appendix 6, May, 1980, p. 26.

** Ibid., p. 22.

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costs) resulting from hydrocarbon prohibitions within the Sanctuary peak at approximately \$30 million in 1992; thereafter, the loss declines as estimated production levels would decline.

NOAA has itself made this point in its supplementary information discussion accompanying the final rules for Channel Islands National Marine Sanctuary:

At the time of notice of proposed rulemaking and draft environmental impact statement were published, it was evident that the economic impacts of the regulations would not be sufficient to require a regulatory analysis. Furthermore, both the costs and benefits of these regulations are somewhat speculative and not easily quantifiable so that the value of a regulatory analysis is marginal at best. Nevertheless, in response to the comment, NOAA contracted for an independent analysis which confirmed that the economic impacts were below all the thresholds for a regulatory analysis and were generally negligible.

The sanctuary regulations are not expected to have an effect greater than \$30 million on the economy as a whole during any one year. Without a Sanctuary, peak oil and gas production would be reached in 1992 when the total effect of the prohibition would amount to \$29.96 million. The effects on industry and the relevant geographic region are expected to be \$1.5 and \$4.7 million respectively during the peak production year. Essentially no impact is expected on consumers, costs or prices, productivity, employment, supplies of goods and services or competition. These estimates are based on a generous estimate of the hydrocarbon reserves available within the Sanctuary--double the only available U.S. Geological Survey (USGS) estimate for a portion of the Sanctuary.*

In light of the current situation, these words must now haunt NOAA, as it searches to justify its improper actions.

NOAA now proposes to assess the economic worth of all biological, commercial, recreational, and aesthetic resources found within the Channel Islands National Marine Sanctuary. Defenders does not envy NOAA's "ill-assumed" task; these values are certainly not easily reduced to

* 45 Federal Register, No. 193, October 2, 1980, p. 65202.

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dollar figures. Defenders firmly believes, however, that the documented data speak for themselves in this regard. Among the array of biological resources alone which are at stake:

- 34 species of marine mammals, many of which are threatened or endangered;
- over 56 species of marine birds; many of which are also listed as threatened or endangered;
- more than 200 species of fish occurring in nearshore waters, and over 200 additional species found in deeper waters; and
- extensive kelp beds which support over 800 individual invertebrate, fish and plant species.

Added to these, of course, must be the commercial harvest of fish, shellfish, invertebrate species such as sea urchins and lobster, and kelp.

There are also the recreational uses of the area which must be considered, such as fishing, pleasure boating, SCUBA diving, spearfishing, photography and nature study. All of these activities are on the increase, but would obviously suffer greatly were the quality of water and resources to be jeopardized or damaged by hydrocarbon-related activities.

B. Point Reyes-Farallon Islands National Marine Sanctuary. The potential for recoverable oil and gas reserves at Point Reyes-Farallon Islands is substantially less than at Channel Islands. This point is clearly made in the Final Environmental Impact Statement for this Sanctuary:

In 1974, a petroleum industry ranking of resource potential (conducted at the request of the Department of the Interior) in 17 offshore areas classified the Sale #53 area 16th out of all 17 areas considered, and 11th out of the 12 frontier areas; only the areas off Oregon and Washington were ranked less desirable (California Office of Planning and Research, 1978). In the most recent ranking of resource potential for offshore areas, industry ranked central and northern California 12th, and USGS ranked the area 16th out of 22 areas. (Webb, 1980, personal communication). Industry ranked the area 7th of 22 in terms

Mr. Dallas Miner
Page Twelve
July 31, 1981

of interest in exploration. Given the substantial and persistent increases in world oil prices, the potential for economically recoverable reserves in these low priority areas appears to be improving and may increase interest in the future.*

Many of the same species of marine wildlife may be found at Point Reyes-Farallon Islands as are also at Channel Islands. The Farallon Islands environment, however, is largely unsullied by human activity due to the less hospitable nature of the surrounding waters. This element perhaps makes it even more valuable, in terms of preserving a wild and unspoiled area.

The islands themselves have been a National Wildlife Refuge since 1909. Among the thousands of inhabitants are:

- over 100,000 pairs of nesting seabirds (including almost the entire world population of ashby storm petrels, and the endangered peregrine falcon and brown pelican);
- over 20 individual species of marine mammals, including: California sea lions, Stellar sea lions, harbor seals, Northern elephant seals, Northern fur seals, California sea otters, and more than 17 species of cetaceans. Among the migratory whale species are the endangered blue and humpback. Additionally, the world's entire population of California gray whales migrates through these waters twice annually;
- abundant and varied fish species, both commercial and sport species;
- crab resources providing over 40% of the San Francisco Bay's annual commercial catch; and
- huge kelp beds which provided food and shelter to many other invertebrate and fish species.

This unending array of marine lifeforms and the awesome beauty of the supporting environment additionally results in millions of annual visitors to the Point Reyes National Seashore and thousands of "whale-watchers."

* Final Environmental Impact Statement on the Proposed Point Reyes-Farallon Islands Marine Sanctuary, September, 1980, pp. E-28, E-33.

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To allow the possible jeopardy of these resources would be not only an unspeakable tragedy, but would indicate a total lack of economic and aesthetic priorities on the part of decisionmakers. The State of California has long recognized the value -- both aesthetic and commercial -- of these resources, and has taken appropriately protective measures, such as the designation by the State Water Resources Control Board of six "Areas of Special Biological Significance."

Unlike Channel Islands, no formal economic assessment of oil and gas resources has been performed for the Point Reyes-Farallon Islands area. The most abundantly logical reasons for this is the lack of industry's interest in pursuing this area's development. Some 57 tracts leased in 1963 were subsequently abandoned after exploratory activities revealed insufficient resources for development.*

III. Conclusion.

NOAA's suspension actions have abruptly and drastically altered the designated Sanctuary plans, and there has been no opportunity for meaningful public review or participation in these decisions. The actions have effectively undermined and ignored the entire public participation process which created these two Sanctuaries, and upon which the National Marine Sanctuary Program must depend for its progress.

Defenders well knows the improper and undue influence that the Department of the Interior, as well as some oil and gas industry representatives, have exerted upon NOAA in this matter. These influences will not be discussed in these comments, but are nonetheless noted as background. The inter-agency jurisdictional dispute between DOI and NOAA over who regulates the OCS is well-entrenched and apparently far from

* Ibid.

Mr. Dallas Miner
Page Fourteen
July 31, 1981

resolution.

Defenders suggests, however, that resolution of the Sanctuaries' regulations may well ultimately require a court decision, as it also appears that NOAA has, by its actions, violated the requirements of § 553 of the Administrative Procedure Act (APA). In substance, § 553 requires that with respect to rulemaking activities, agencies act according to "good cause," and in any event, give 30 days' notice of the effective date of any such proposed rulemaking action. Neither of these requirements was met by NOAA in its initial suspension action.

In summary, Defenders urgently states that NOAA must make the regulations permanently effective as soon as possible. To delay or do otherwise not only violates the spirit of the Marine Protection, Research and Sanctuaries Act, but will open the door to totally unacceptable environmental risks to these priceless ocean systems.

Sincerely,

Sherrard Coleman Foster

Sherrard Coleman Foster
Marine Issues Specialist

SC/

- 32.1 Comment noted. The Sanctuary boundaries suggested in this comment were considered as Alternatives in the NOAA EIS as noted.
- 32.2 Comment noted.
- 32.3 BLM and DOI are fully aware of the process involved in establishing the Channel Island National Marine Sanctuary and actively participated in that process. Our most recent comments concerning the Sanctuary dated August 8, 1980, are on file with NOAA. DOI supported the concept of the Sanctuary, but opposed prohibition of hydrocarbon operations since we feel Interior has the necessary authority to adequately protect the Channel Islands from impacts from oil and gas operations.
- 32.4 As noted, oil and gas resources are estimates at this time.
- 32.5 As noted, industry has shown high interest in some tracts within the Channel Islands National Marine Sanctuary.
- 32.6 BLM is aware of the controversy on this matter and has made no decision on leasing more tracts in the Channel Islands National Marine Sanctuary. Final tract selection will be based on many considerations, and certainly will be directly affected by the results of the regulatory analysis being conducted by NOAA.
- 32.7 See response 32.6.
- 32.8 We acknowledge these statements taken from our DEIS. Some of these statements have been revised in the FEIS to more clearly describe anticipated impacts.
- 32.9 This statement in the FWS opinion is misleading. The second sentence should read, "Included within such a reduction could be . . ." Refer to the clarification letter from FWS included in Section VII.
- 32.10 BLM has reviewed the information provided and incorporated it into the EIS as appropriate. We understand NOAA's problem relative to this sale and will assist in their analysis, as needed.

EXXON COMPANY U.S.A.
OFFICE BOX 40290 - HOLLYWOOD, CALIF. 90017

EXPLORATION DEPARTMENT
ALASKA/PACIFIC DIVISION
R. G. WILSON
MANAGER

August 7, 1981

Comments Regarding Draft
Environmental Impact Statement
Proposed OCS Lease Sale 68

Office of the Manager
Pacific OCS Office
1340 West Sixth Street
Room 200
Los Angeles, California 90017

Dear Sir:

Exxon Company, U.S.A. (a division of Exxon Corporation) offers the following comments reflecting our views and opinions of the Draft EIS for proposed OCS Lease Sale 68.

This Sale, and the vigorous proposed leasing schedule of which it is a part, is a necessary step toward preparing our nation to realistically plan its energy future. Rapid exploration of the promising areas of the OCS is necessary to define the resources that will be available to the nation. This undiscovered potential constitutes a key part of the future energy supply.

In our most recent Energy Outlook, 1980-2000, issued in December, 1980, the total energy demand in the U.S. is projected to increase from 37.9 million barrels per day of oil equivalent in 1980 to 45.5 million BOE in the year 2000. The supply from existing domestic reserves is projected to decline to 3.8 million BOE by 2000.

We project that by 2000, 24 percent of domestic oil and 44 percent of domestic gas requirements will be supplied by discoveries made between now and then. The OCS areas that have not yet been leased are expected to provide a significant portion of those reserves. It is imperative that the undiscovered potential of these areas be defined as quickly as possible. Long lead times between initial leasing and peak production require that an active OCS leasing program be continued. For the above reasons, of the alternatives available, we support Alternative 1 which calls for the sale to be held as proposed.

Many of the areas being offered in Lease Sale 68 are in deep water or harsh environments. These areas require a longer time period for exploration and development, thereby, creating a distinct need for longer lease terms. We strongly urge that all deep water (or harsh environment) tracts be offered with a 10-year lease term.

A DIVISION OF EXXON CORPORATION

Office of the Manager

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August 7, 1981

We note with considerable concern that the Department of Defense has indicated a desire to remove 50 tracts from the Sale (page 3-103). Many of these tracts have potential for significant hydrocarbon production. In the past, the petroleum industry and the Department of Defense have enjoyed a long history of friendly cooperation, and in almost all instances, it has been possible to work out means and methods by which exploration and production activities can be carried out in areas where joint activities take place. We urge an intensive effort between DOI and DOD to work out means and methods of joint usage, or mitigation measures, so that the sale can be held without deleting these important tracts.

We are encouraged by the offering of sale tracts in the Santa Barbara Ecological Buffer Zone, and in the proposed Channel Islands Marine Sanctuary Buffer Zone. We are confident they can be explored without harm to the environment.

The undiscovered resource potential of the sale area that is estimated in the DEIS (page 1-5) is very conservative and does not place sufficient emphasis on the high-side potential. If undiscovered resource estimates are used to decide whether to open areas to leasing, it is important to give consideration to the large changes that can occur in resource estimates as more information becomes available through exploration. An example is the change in the U.S.G.S. estimate of the resource estimate for the Colorado Plateau and Basin and Range areas between 1975 and 1981. In 1981, their mean estimate increased over six times the 1975 estimate as more information became available from drilling in the overthrust play of southwest Montana and northeast Utah.

The estimated investments for drilling and developing the reserves of the sale area (Table 1.B.1.d-3) are too conservative. Our experience in platform construction and development/exploration drilling in the Sale 68 area indicates on the average that industry expenses will be considerably higher than your estimates. Our concern is that unrealistically low cost estimates may be used in the U.S.G.S. evaluation of the tracts, thereby resulting in unrealistically high mean range of values. The mean range of values assigned to the tracts can severely impact the outcome of a sale. For example, Exxon was high bidder on 11 tracts in OCS Sale 53 but had five of these rejected because of excessively high MROV's. We strongly urge that the cost estimates in the DEIS be updated and reworked to realistically reflect the current costs of OCS operations.

The report does not adequately consider the impacts if crude oil from the proposed Sale could not be refined locally. The draft assumes there should be no impacts on refineries in the Los Angeles Basin because they "have the capabilities and would process all of the oil from the proposed Sale." However, it also concludes, on page 2-6, that "significant impacts could occur if crude from the Sale were of such quality that it could not be refined locally." These impacts are never addressed. Considering the probability that crude oils produced from the proposed Sale may not form acceptable feedstocks for Los Angeles refineries, we believe the final EIS should address the impacts of either (1) modifications to the refineries in Los Angeles, or (2) transporting the crude to refineries elsewhere.

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Office of the Manager

-3-

August 7, 1981

Regarding the transportation system for crude oil from the Sale area, there remain serious questions concerning the proposed Las Flores Canyon-Los Angeles Basin pipeline. The DEIS refers to a study by Hallanger Engineer Consultants (page 3-101) which concludes that the proposed pipeline is technically feasible. However, we believe the FEIS should also consider the economics and practicality of this proposed pipeline, as well as the alternatives to pipeline transportation.

Insufficient emphasis has been placed on the positive impacts regarding marine biological productivity enhanced by the installation of platforms in the OCS. The effects of these artificial reefs have been documented in the Santa Barbara Channel (Institute of Marine Resources, University of California, IMR Ref. 76-13, March, 1977), yet many of the conclusions in the DEIS completely ignore these. In particular, the discussion of Unavoidable Adverse Impacts on page 4-130 is unacceptable because it considers the negative impacts of platforms as being "unavoidable". This and other sections should be rewritten to consider the positive contribution to the marine environment resulting from platform installation.

The potential historic and cultural properties of the OCS need to be identified in the final EIS to reflect the realities of the area's resources. A recent opinion of the Solicitor (DOI) regarding cultural survey requirements in conjunction with mineral leases and rights of way, concluded that these surveys were not intended to be expeditions searching for unknown resources on the OCS; they are designed primarily to protect those significant resources either known or suspected to exist in the area. Because of this opinion, we believe any significant historic or cultural resources that are believed to exist in the 44 tracts listed on page 4-123, which invoke the Cultural Resources Stipulation, should be identified in the EIS.

In general, the summary section (pages i-vii) of the Draft EIS identifies and summarizes the probabilities and significance of the impacts of the Sale in fair perspective. However, the remainder of the document contains numerous errors and contradictions to those conclusions. Some of these have been discussed above. We recommend the detail in the FEIS be reworked to reflect the balance and perspective found in the draft summary.

Exxon appreciates the opportunity to present our views on the issues and impacts that are discussed in the Draft EIS. Our comments have been limited to the major issues which, in our opinion, need to be more fully considered. These comments have also been kept as brief as possible; therefore, little documentation for our viewpoints has been offered. We do not believe this is the proper medium for such documentation. However, if additional dialogue would be beneficial, we are prepared to discuss specific nonproprietary issues in more detail.

Sincerely,

R.D. Wilson

RDW:mg

- 33.1 Comment noted.
- 33.2 The Secretarial Issue Document (SID) will discuss the options for the conditions of the sale as well as length of initial lease term. The terms under which the leases will be offered, resulting from the analysis available in the SID, is available for comment in the Proposed Notice of Sale.
- 33.3 Military Stipulations 1 and 2 indicate cooperation between DOI and the Military on this space-use conflict (Section I.B.6). Also see Section VII.A.
- 33.4 Comment noted.
- 33.5 In order to clarify the use of resource estimates, the probability of occurrence of reported amounts has been added to Section I.B. Resource amounts can only be determined with certainty after an area is thoroughly explored, then estimates are subject to change.
- 33.6 The investment costs used in the EIS represent average estimates based upon available industry data. These are not the same costs used for specific tract valuations. The individual tract costs are selected from a distribution which allows variation depending upon differing site conditions.
- 33.7 See response 30.46.
- 33.8 The pipeline studied by Hallanger Engineers for Santa Barbara County was assumed to be an existing pipeline for Proposed Sale No. 68 Transportation Scenarios. However, Section III.C.7 has been revised to include reference to the ongoing onshore pipeline feasibility studies in the referenced area. The analysis of the feasibility and economics of such a line is beyond the scope of the EIS.
- 33.9 The positive effects of platforms are noted and discussed in Section IV.C.5. The section referenced in this comment pertains only to adverse impacts and is not the appropriate place for positive effects.
- 33.10 The Archaeological Resources Protection Act of 1979 provides an agency the option to not reveal cultural resources information in public documents since revealing locations may contribute to the destruction of resources that the Federal government has the responsibility to protect. It is DOI policy to not publish this information. The information is available to qualified individuals.
- 33.11 The EIS has been revised as appropriate.

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FRIENDS OF THE SEA OTTER

P.O. BOX 221220, CARMEL, CALIFORNIA 93921

August 12, 1981

Mr. John Lane
Environmental Assessment Officer
Pacific OCS Office
Bureau of Land Management
1340 West 6th Street -- Room 200
Los Angeles, CA 90017

Re: OCS Lease Sale #68
Draft Environmental Impact Statement

Dear Mr. Lane:

The following comments on the Draft Environmental Impact Statement for Outer Continental Shelf Lease Sale #68 (Southern California: Pt. Conception south to the Mexican border) are submitted on behalf of over 4,200 members nationwide of FRIENDS OF THE SEA OTTER -- a non-profit conservation organization organized in 1968 to aid in the protection and enhancement of the California sea otter population and its nearshore marine habitat.

Although at this time there is not an established sea otter population within the proposed Lease Sale area, if the current rate of range expansion continues, the sea otters will naturally repopulate this area well within the lifetime of the Sale (historically, prior to the fur trade, sea otter abounded in the waters off the Channel Islands).

Additionally, as virtually the entire existing range of the California sea otter population (Santa Cruz south to Pismo Beach) is vulnerable to oil spills from passing tanker traffic, tanker ports and proposed offshore oil development, the U.S. Fish & Wildlife Service (in consultation with the U.S. Marine Mammal Commission and the California Department of Fish & Game) is exploring the possibility of translocating a number of otters to establish an additional breeding colony (or colonies) of sea otters in an area of their former historic range less susceptible to oil spills.

We agree with the statement of the U.S. Fish & Wildlife Service in their Biological Opinion on Lease Sale #68 (April 29, 1981, page 21):

"Increased threats from oil contamination amplify the urgent need to establish a second population, thus diminishing the potential catastrophic effects of a large scale oilspill on California sea otters."

We favor San Nicolas Island in the Outer Banks area of Lease Sale #68 as the site of the first California sea otter translocation (see attached Position Statement).

As pointed out in the Service's Biological Opinion, under a cooperative agreement with the Center for Coastal Marine Studies of the University of California, Santa Cruz, the Service is currently studying San Nicolas to further assess its suitability as sea otter habitat.

FRIENDS OF THE SEA OTTER

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August 12, 1981

The Service is also in the process of contracting for a coastal resources/use map of the west coasts of California, Oregon and Washington to help determine the most favorable site for sea otter translocations. Although the final decision as to where to move otters will not be made for at least another year, the Bureau of Land Management should be aware that San Nicolas Island is a high-interest candidate for the first transplant. As further pointed out in the Service's Biological Opinion, should otters become established in this area, BLM must insure that its actions would not jeopardize the existence and recovery of this population of southern sea otters.

We are pleased that in OCS Lease Sale #68 no tracts within 12 miles of San Nicolas Island are proposed for leasing. We expect that in assessing this and future oil lease sales in the Channel Islands area, that BLM remain cognizant of the serious consideration being given San Nicolas Island as a sea otter translocation site.

Furthermore, as proposed offshore oil development along the sea otter's current range has made the need for a translocation even more critical, we urge the Bureau of Land Management to pursue all appropriate avenues to acquire and allocate sufficient funds to insure the continuation of the USFWS studies of San Nicolas Island.

We strongly oppose leasing of tracts within the boundaries of the Channel Islands National Marine Sanctuary. As oil spills pose the greatest threat to fragile marine resources, permitting offshore oil development within these biologically sensitive areas would render the Sanctuary designation meaningless.

We question the statement on page 4-16 of the DEIS attributed to Captain Charles Corbett of the U.S. Coast Guard to the effect that oil spill containment and recovery equipment can be expected to operate successfully in 8-10 foot seas and in winds of at least 20 knots. We would remind BLM of the statement made in the U.S. Fish & Wildlife Service's Biological Opinion on OCS Lease Sale #53 (September 18, 1980, page 11):

"The ability to contain an oilspill at sea is questionable. The technology for containment of an oilspill in the open ocean is in its infancy. According to the U.S. Coast Guard, containment may reach at best 50 percent (Louis, pers. comm.) and may be as low as 10 percent (Hann, pers. comm.)." (emphasis added)

We also agree with the California Coastal Commission that the FEIS should address cumulative impacts of additional oil development in the Channel, particularly in light of adjacent development now underway in the Santa Maria Basin.

We further concur with the California Coastal Commission that the ability of Southern California oil spill cooperatives to respond to accidents along 300 miles of shoreline and as far out to sea as 140 miles should be fully investigated and needed improvements identified and implemented.

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August 12, 1981

We also agree with the State of California's recommendations for Biological Stipulations in Lease Sale #53: biologically sensitive areas should be surveyed at the time of leasing and data obtained should be made available to state agencies and the interested public.

We appreciate the opportunity to comment on the DEIS and hope the Bureau of Land Management will be vigilant in insuring the safest and most environmentally sound methods of offshore oil development.

Sincerely,



Carol Fulton
Executive Director

CF:fc
Enclosure

34.13

FRIENDS OF THE SEA OTTER

Position Paper on Management Perspectives

In 1977, the southern sea otter was declared a Threatened Species by the U.S. Secretary of the Interior, primarily because its small population size (under 2,000) and restricted distribution (1/10th of its former range) made it extremely vulnerable to spills from oil tankers. Since that time, the population has apparently stopped growing in size, tanker traffic has increased, and proposed offshore oil lease sales encompass virtually the entire range of the California population of sea otters — the most vulnerable to oil of all marine mammals.

First, we believe it would be most beneficial for the southern sea otter and for the marine ecosystems in which it plays a significant role for the California otter population to continue to redistribute itself wherever its natural movements may take it. We firmly object to management of southern sea otters by range restriction at this point in their tenuous recovery from near extinction — at a time when critical information about their biology, population dynamics, and long-term effects on marine ecosystems in California is minimal and just beginning to accumulate.

Second, we strongly support management plans to establish two or more successful reserve breeding colonies of southern sea otters in sites elsewhere within their former U.S. range. Such manipulation now appears necessary in order to preserve the California sea otter — virtually its entire population is encompassed by proposed OCS Lease Sales #53 and #73; and almost the entire breeding stock of this depleted southern population of Enhydra lutris already lies in a vulnerable position between two major oil tanker ports — one in Monterey Bay to the north, the other at Estero Bay to the south. The southern sea otter will remain threatened with serious depletion or extinction as long as the entire existing population unit of this particular life form is located along the central California coast — where major oil hazards already exist and where increased oil-related activities are projected.

We believe translocations of reserve colonies of California otters should be undertaken as soon as possible and accomplished with the minimum number of animals necessary to insure success and viability of the transplants, since translocations are hazardous for otters.

Translocation sites should be as well removed as feasible from current or potential oil spill hazards, but should be as close geographically as possible to the present population distribution — preferably at locations where water temperatures and habitat are as similar as possible, where the food supply is abundant, where there are extensive kelp beds and protected coves for shelter, where natural factors are likely to discourage emigration, and where human impacts on a newly introduced otter population and its essential food supply can be effectively

controlled. If possible, translocations should be made where recreational and commercial shellfisheries are utilized by relatively few sport or commercial fishermen.

At present, pending the outcome of studies of possible transplant sites within the contiguous U.S.A., we are looking toward San Nicolas Island, in the Outer Santa Barbara Channel, as the best choice for a primary translocation. San Nicolas once supported a sea otter population and today harbors abundant and healthy populations of various marine mammals. It is surrounded by near-pristine waters, abounds in lush kelp forests, and is separated by considerable distance and rough ocean conditions from the mainland. Disturbances to a newly reestablished otter colony, and its habitat, could be more easily controlled and kept minimal at San Nicolas Island than along a highly-developed or easily-accessible mainland coast location. San Nicolas is serviced by aircraft and navy vessels; a landing strip at the NW end of the island could be used for otter transport by air. Most high-interest offshore oil tracts of OCS Lease #48 in the Santa Barbara Channel lie a substantial distance shoreward of San Nicolas, and exploratory drilling in the offshore tracts in the Tanner-Cortes Banks, about 30 miles to the south of San Nicolas, has not been successful.

We oppose long-distance translocations to Canada or Mexico, outside of U.S. jurisdiction, or to other areas north of the contiguous United States.



Third, we believe that the California sea otter's protection under the Endangered Species Act of 1973 should continue until at least two reserve breeding colonies have been successfully established and that its protection under the Marine Mammal Protection Act of 1972 should continue until optimum sustainable population levels have been reached and maintained.

Fourth, we strongly support development of an oil spill contingency plan, increased monitoring of the population, implementation of a habitat protection plan, vigorous state and federal law enforcement efforts against harassment and killing by humans, and a continuing research program on the threatened southern sea otter.

— Dr. Betty S. Davis

Responses to FRIENDS OF THE SEA OTTER

therefore, the spill co-ops represent a second line of defense in the event of an oil spill.

- 34.1 The sea otter range expansion has apparently stopped. U.C. Santa Cruz has provided BLM with results of their recent survey showing southern concentrations of animals moving northward. Expansion of the sea otter range is discussed in the EIS.
- 34.2 Comment noted.
- 34.3 Comment noted. See response 34.7.
- 34.4 Comment noted. No FY82 funding is anticipated for the San Nicolas Study.
- 34.5 A statement regarding the possibility of a sea otter transplant to San Nicolas is now included in the FEIS.
- 34.6 Comment noted.
- 34.7 BLM has investigated the possibilities of providing funding assistance for preliminary translocation studies. The conclusion of that investigation was that funding for such studies should be provided by the responsible agency, FWS. BLM felt results of such studies would not affect decision making questions regarding OCS leasing decisions. BLM is anticipating funding sea otter population studies to increase the knowledge of population dynamics of this species. Results of such studies may also be helpful to any translocation effort.
- 34.8 Comment noted.
- 34.9 See response 18.48.
- 34.10 See response 18.48.
- 34.11 The EIS has been revised to more completely discuss cumulative impacts.
- 34.12 The Proposed Lease Sale No. 68 tract furthest from the coast is approximately 90 miles out to sea (not 140 miles) and the entire length of the lease sale area is less than 150 miles along the California coast (excluding island coastlines), not 300 miles.
- The oil companies are required by law to maintain oil spill containment equipment at each platform and,

34.13

Comment noted. See response 18.47.

*Greater Bakersfield
Chamber of Commerce*



July 17, 1981

Bureau of Land Management
Pacific OCS Office
1340 West 6th Street
Room 200
Los Angeles, CA 90017

Gentlemen:

SUBJECT: OCS Lease Sale #68

Our organization has consistently supported the outer continental shelf oil and gas lease sale for offshore activities, and we are especially supportive of this particular sale scheduled for June of 1982.

In our opinion, the economy depends on energy; therefore, an adequate reserve of oil must be maintained at all times. This is the primary reason members of the Greater Bakersfield Chamber of Commerce support the development of energy sources that are available to us.

Since our economy is especially dependent upon petroleum and since this need cannot be filled at the present time by other sources, we strongly recommend approval of the OCS Lease Sale #68.

Sincerely,

Hank Hinse
President

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Response to GREATER BAKERSFIELD CHAMBER OF COMMERCE

35. Comments noted.

35.

7-263



LOCAL
12

INTERNATIONAL UNION OF OPERATING ENGINEERS

AFL-CIO [E]

WM. C. WAGGONER
Business Manager
and
General Vice-President

Response to INTERNATIONAL UNION OF OPERATING ENGINEERS,
UNION LOCAL NO. 12

June 22, 1981

36.

Comments noted.

Bureau of Land Management
1340 West 6th Street, Suite 200
Los Angeles, Ca. 90017

Attention: W. E. Grant

Dear Mr. Grant:

In regards to the Outer Continental Shelf Lease Sale (OCS#68) Offshore California, the International Union of Operating Engineers, Local No. 12, is highly in favor of the proposed sale.

Local No. 12 represents more than 28,000 members in Southern California. Many of our members have worked to erect Drilling Platforms off the California shoreline. We also represent employees who work for Oil Drilling Companies. With the recent high rate of unemployment in the construction industry, I would hope this work would ease the pain of our members who are out of work. Also, I am an environmentalist and believe in striving for a better place for our children.

I was born in San Diego, California and loved to spend time at the beach when I was a youngster, as my children do now. My mother would not permit me to enter the house until I cleaned the tar off my feet. The tar was from years of seepage from oil deposits. I have also visited several beaches on the East Coast where they are as white as sugar. I believe, if we remove the oil offshore in California, we will improve the beaches for generations to come. I also believe America has to be energy independent to keep peace in the world, and I have spoken to many members who are in favor of the proposed land lease. Please let it be known at your meeting in Santa Barbara that Local Union No. 12 fully supports (OCS#68).

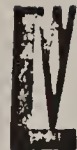
36.

Sincerely yours,

Wm. C. Waggoner, Business Manager
I. U. O. E., Local Union No. 12 and
General Vice-President

William A. Floyd
By: William A. Floyd, Vice-President
I. U. O. E., Local Union No. 12

WCW:WAF:js
cc: W. C. Waggoner
Cecil Montgomery



Ann York
17929 Castellammare Drive
Pacific Palisades, 90272

Response to LEAGUE OF WOMEN VOTERS OF SANTA MONICA

THE LEAGUE OF WOMEN VOTERS OF SANTA MONICA, CALIFORNIA

37.

Comments noted.

August 10, 1981

Pacific OCS Office
Bureau of Land Management
1340 West 6th Street
Los Angeles, California 90017

RE: Written Testimony Opposing OCS
Lease Sale #68

Gentlemen:

The League of Women Voters of Santa Monica, which is a part of the League of Women Voters of the United States, has done an in depth study of both on-shore and off-shore drilling. We considered the need for oil and the hazards attendant thereto. As a result of that study we reached an agreement in opposition to both on-shore and off-shore drilling in this area.

Because of the dangers to the coast line, to the marine life, and the recreational facilities which are now part of Santa Monica, we urge you not to grant leases for Tract No. 68.

We trust our position and this letter will receive careful consideration, as it is based on a careful study.

Sincerely,

Ann York
Ann York, President
THE LEAGUE OF WOMEN VOTERS
OF SANTA MONICA

/rlk

7-265

37.



NO OIL, INC.

P.O. Box 991
Pacific Palisades, California 90272

August 13, 1981

Pacific OCS Office (BLM)
Attn: Environmental Assessment Manager
1340 West Sixth Street, Room 200
Los Angeles, California 90017

Re: Draft Environmental Impact
Statement, Lease Sale OCS#68

Dear Sirs:

Our organization is a citizen group which is opposed to oil drilling on the land and offshore in our area of West Los Angeles.

We have consistently opposed offshore drilling in Southern California, especially in the Santa Monica Bay, areas immediately adjacent to it, and ocean areas surrounding the coastal islands. We have participated with numerous other citizen groups and governmental entities several times during the past decade in opposing offshore drilling in environmentally sensitive areas. The many arguments which we and others have made before are equally applicable now. The need for domestic energy does not mean that environmental protections or concerns should be ignored-- rather, the process of balancing energy needs with environmental needs is even more applicable today.

We believe that the decision reached on May 30, 1980, by the Secretary of Interior to exclude the Santa Monica Bay from this sale should be accorded special weight. We further suggest that the intent of that decision was to delete all such tracts; and that it was not until detailed information regarding the 221 tracts (now 218) that were to be included in lease sale OCS #68 was released some weeks later that it was realized that the following tracts were still in the proposed sale:

122	138
123	145
128	146
129	147
136	141
137	152

Pacific OIC Office (BLM)
August 13, 1981
Page 2

These tracts are within Santa Monica Bay or immediately to the west of it. In the event of spill, blow-out or major accident, the prevailing westerly wind and wave action would cause oil to come onshore at the site of the most heavily used beaches in Southern California. The closest of these tracts is within approximately five miles of the beach (see, for example, tract 129 and its relation to Point Dume). All these tracts are within approximately 25 miles of the shore. We believe that the intent was to exclude all these tracts, and that the fact that they are still in the proposed sale may be the result of either inadvertence or subversion by staff of the intent of the then Secretary.

In addition to the risk of a major accident such as spill or blow-out, drilling mud and brine, oil seepage, rig tender vessel emission and air pollution from operations will have a major and substantial impact on one of the largest urban areas in the United States. The additional risks involving shipping accidents (such as commercial, oil tanker and pleasure craft traffic colliding with the drilling platforms), seismic activity (a new, major danger with the recent significant activity of the fault lines immediately offshore) and the many adverse impacts on both wildlife and recreational uses are each sufficiently important so as to dictate deletion of the 12 tracts listed above. Further, the Final EIS should include actual data on the frequent earthquakes during the past three years centered in the offshore area extending from Santa Monica Bay to Point Mugu.

The Draft EIS recognizes that it is probable that lease sale 68 will produce more than one spill or blow-out of over 1,000 barrels and "one-half" a spill of over 10,000 barrels. We do not believe this adverse impact can be tolerated. We submit that the attempt in the Draft Statement to minimize the significance of this probability by pointing out the likelihood of even more tanker spills is a perverse logic that should be corrected in the Final EIS.

For the Board of Directors

Thomas M. Adams
Thomas M. Adams
President

TMA:jc

Responses to NO OIL, INC.

- 38.1 Sections IV.A.1 and IV.C.17 address these issues.
- 38.2 See response 8.1.
- 38.3-4 Deletion of the tracts outside Santa Monica Bay is considered as Alternative 4 in the EIS.
- 38.5 Recent seismic data received from Cal Tech has been included in the final EIS.
- 38.6 The impacts have been analyzed as deemed appropriate by BLM. BLM policy and CEQ regulations require analysis of cumulative impacts, as is done in the EIS.



page #2

August 11, 1981

Pacific OCS Office
Bureau of Land Management
1340 W. 6th Street
Room 200
Los Angeles, Ca. 90017

Attention E.A. Manger

Dear Mr. Manager:

The following comments are submitted as written testimony relative to the Department of Interior's proposed lease sale #68 for oil and gas development and exploration in California's outer continental shelf (OCS) from Point Conception to the Mexican Border.

The Ocean Park Community Organization is a neighborhood based grass-roots organization representing the community of Ocean Park, which is a neighborhood in Southwest Santa Monica with 20,000 people.

The Draft Environmental Impact Statement for lease sale #68, prepared by the Bureau of Land Management (May 1981), does not sufficiently emphasize the negative impact of proposed oil drilling on many aspects of our daily lives. Oil and gas exploration in tracts lying just outside Santa Monica Bay pose a particular threat to our community. The potential for oil leakage and/or spills during oil and gas exploration is great. Effects of oil spills are devastating and long lasting; its effect on water quality affects our health, safety, social and economic well-being. In addition to the effects of oil spillage, we also need to consider the effects of additional tons of effluents, fuel discharge, drill mud and other waste products of oil exploration and development activity.

Our Southern California beaches are some of the best and most heavily used in the world. We feel that the Santa Monica Bay beaches, the ocean itself, adjacent riparian and wetland habitat, and the offshore Channel Islands are a rich ecological resource that support a myriad of plant and animal life. Oil spills and pollution brought about by exploration activities are a detriment to these places of beauty and natural habitat.

Besides the obvious hazard, lease sale #68 presents to the environment, there will be negative impact on our local economy - Santa Monica has a substantial interest in preserving our recreation and support industries. We depend on our beaches, beach facilities and the ocean vista to attract millions of visitors per year. Tourism generates over \$93 million in revenue to our local businesses.

We urge the Department of Interior to reconsider its course and withdraw its nomination of OCS lease sale #68, particularly the tracts located at Santa Monica Bay, for oil and gas exploration and development.

Sincerely,

Kelly Roberts
Marianne Boretz

OCEAN PARK COMMUNITY ORGANIZATION

Response to OCEAN PARK COMMUNITY ORGANIZATION

39. Sections III.C.5, III.D.3, and IV.C.15 have been revised as appropriate.

**PACIFIC COAST FEDERATION OF FISHERMEN'S
ASSOCIATIONS, INCORPORATED**

3000 BRIDGEWAY BUILDING, SUITE 104 • (415) 332-5080
P.O. BOX 1626, SAUSALITO, CA 94965, USA

12 August 1981

United States Department of Interior
Bureau of Land Management
Pacific Outer Continental Shelf Office
1340 W. Sixth Street, Room 200
Los Angeles, CA 90017

Attention: John Lane or Stephen Smith

RE: Comments - Draft Environmental Impact Statement Proposed 1982
Outer Continental Shelf Oil and Gas Lease Sale Offshore
Southern California - OCS Sale No. 68

Dear sirs:

The Pacific Coast Federation of Fishermen's Associations represents 16 California commercial fishermen's organizations including the Commercial Fishermen of Santa Barbara, Inc., and the United Fishermen's Organization of Southern California. We have reviewed the Draft Environmental Impact Statement for OCS Lease Sale No. 68 and have the following comments.

First, the Bureau of Land Management is to be congratulated for the most thorough effort we have seen yet on assessing the potential impacts of oil exploration and development on fishing resources and commercial fishing. Specifically, the recognition for the first time in a DEIS of the problems commercial fishermen have encountered in the Santa Barbara Channel on State Lands is welcomed. These problems include the mud mounds and trenches from the anchors of pipelaying barges, the impacts of trace metals in drilling muds, competition for berthing spaces, increased vessel traffic and the impact of seismic vessels on fishing activities.

Second, it is obvious from the DEIS (pp. 2-17, 18) that many of the environmental assessments will not be completed prior to the proposed lease sale. These include the Santa Barbara Channel Circulation Model and the Oil Toxicity on Selected Commercial and Sportfish and Shellfish studies. The DEIS states "[a] decision to delay the sale could be made for any number of reasons: for example, to allow completion of further environmental studies; to allow advancement of deep water technology; or to allow further state and local onshore planning for anticipated effects from offshore oil and gas activities." A delay in the sale is necessary for the completion of the study and planning in order that mitigating measures for the offshore development can be prepared. Without proper planning there could be serious damage done to the valuable fishery resources offshore southern California and the commercial and recreational fisheries and support activities dependent upon those resources.

OCS Sale No. 68
Page Two
12 August 1981

Third, the DEIS fails to make a compelling case for the exploration and development of the OCS 6B area at this time. Indeed, the oil and gas estimate in OCS 68 are even less than they are for OCS 53. The DEIS fails to state whether there exists the ability presently to develop this area even if the lease sale were held. Indeed, there is concern that the holding of this lease sale, along with many others in the next five years, will result in an overall loss to the treasury in the amount of bids made for the tracts. This is opposed to the monies that might be generated for the treasury (as well as the assurances to the fishing industry that such oil and gas exploration will be done in a manner not threatening to fishing resources) if the lease sale were held when the oil industry was ready to develop the tracts.

In conclusion, from the DEIS (1) the amount of oil and gas in two areas is relatively small compared to national needs, (2) there is no indication that oil and gas exploration is necessary in the area immediately, (3) many of the studies and plans have yet to be completed and (4) the commercial and recreational fisheries offshore this area are valuable. Therefore, the one responsible alternative at this time is Alternative 4 - Delay the Sale.

If the Bureau of Land Management has any questions regarding these comments, please contact our office.

Sincerely,

W.F. "Zeke" Grader, Jr.
W.F. "Zeke" Grader, Jr.
General Manager/Counsel

cc: Hon. Alan Cranston
Hon. S.I. Hayakawa
Hon. Glenn Anderson
Hon. Robert Lagomarsino
Commercial Fishermen of Santa Barbara, Inc.
United Fishermen's Organization of Southern California

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Responses to PACIFIC COAST FEDERATION OF FISHERMEN'S
ASSOCIATIONS, INC.

40.1 Thank you.

40.2 Delaying the Sale would allow for completion of additional studies. However, BLM's studies program is an ongoing process and will be continued regardless of the decision on Proposed Sale No. 68. It may never be possible to learn everything there is to know about the OCS, but BLM will use all data available to evaluate impacts to our valuable fishery resources so that these effects can be planned for and reduced.

40.3 The DELS does not state that capital and labor are available for development of Proposed Sale No. 68. However, the availability of capital and labor is implied in the development scenarios presented in Section I.B.1.

A reduction in real revenues from oil and gas leases would require prices to rise faster than the inflation rate. At the present time, oil prices are expected to be stable and not to rise any faster than the rate of inflation during the next few years; therefore, real revenues would be maximized by sales occurring sooner rather than later.



PACIFIC PALISADES PROPERTY OWNERS ASSOCIATION, INC.
POST OFFICE BOX 617
PACIFIC PALISADES, CA 90272
(213) 454-4254

August 13, 1981

Pacific OCS Office (BLM)
Attention: E.A. Manager
1340 West 6th Street, Room 200
Los Angeles, California 90017

Re: Lease Sale #68

Dear Mr. Manager:

We oppose lease sale #68, and the unseemly haste which characterizes the present approach of the Bureau of Land Management in offering for exploration and exploitation the irreplaceable energy resources which rest under the publicly owned lands and waters of the Outer Continental Shelf.

A study just released by the Center for Environmental Education (reported in the Los Angeles Times of August 12) concluded that oil companies lack the capital, the manpower, and the equipment to keep up with the presently-proposed offshore leasing program, and that oil industry attempts to allocate capital resources to match the present precipitously hasty drilling program could lead to "an economic disruption equivalent to that which occurred during World War II."

The present situation, with decreasing demand for fossil fuels due to dropping consumption, cannot justify such disruptions. The dangers wrought exceed any possible benefits. We respectfully urge a more cautious approach, allowing the public the time for a more intelligent response.

We are particularly opposed to lease of tracts on the edge of Santa Monica Bay and along the Malibu coast, including numbers 122-123, 128-129, 136-138, 145-147, and 151-152. These tracts are a threat and an affront to the sanctuary established by California in recognition of the inappropriate consequences of oil drilling in an area of extremely high public use, conflicting economic interests, and grave geologic instability.

The Pacific Palisades Property Owners Association believes the failure of the Environmental Impact Statement to specifically relate the hazards that are generated by military activities (missile launchings and flights, bomb drops, anti-submarine warfare exercises and general gun firings) to public and environmental safety in the areas adjacent to the projected oil well platforms, is a serious deficiency of the Environmental Impact Statement.

The "Military Operating Areas and Conflicts" map that was provided with the 1979 (Sale 48) Environmental Impact Statement of the Bureau of Land

DEDICATED TO THE PRESERVATION OF THE RESIDENTIAL CHARACTER OF OUR COMMUNITY

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PACIFIC PALISADES PROPERTY OWNERS ASSOCIATION, INC.
POST OFFICE BOX 617
PACIFIC PALISADES, CA 90272
(213) 454-4254

August 13, 1981
page two

Management, shows five submarine transit lanes. Two of the submarine lanes, when superimposed on the 1981 (Sale 68) tract map, intersect directly with lease areas 202-221 and 195-201.

In the past both submarines and missiles have gone off-course, colliding with other objects in the marine and shore environment. Such an accident could occur in the lease area, shearing off and detonating an oil platform. The possible release of nuclear radiation combined with exploding and burning wells, would convert the coastal Zone of California into a disaster area.

The area used for military exercises contains 366 lease sites, yet the Environmental Impact Statement for OCS Sale Number 68, fails to state what probabilities are that one of the numerous types of weapons used in the lease area could strike a well platform, well pilings or underwater oil pipelines.

Because the Environmental Impact Statement for OCS Sale Number 68 fails to consider the potential environmental, social and economic impact of mixed uses of the lease area by the Department of Defense and oil companies, it is our opinion that it fails to meet the legal requirements of the National Environmental Policy Act.

Yours Very Truly,

Rubell Helgeson, President

Alexander M. Man
Land-use and Planning Committee

cc: Senator Cranston
Senator Hayakawa
Congressman Dornan
Congressman Bielsen
Congressman Goldwater
Governor Brown

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7-272

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Responses to PACIFIC PALISADES PROPERTY OWNERS
ASSOCIATION, INC.

- 41.1 Proposed OCS Sale No. 68 is included on the presently approved five-year schedule. Adequate capital, manpower, and equipment is believed to be available in order to explore and develop the sale area.
- 41.2 See response 8.1.
- 41.3 Our office did contact the military regarding hazardous area and this is reflected in Sections III.C.8, III.D.3, and IV.C.18, Military Uses. Also see Section VII.A.
- 41.4 The military is still reviewing those Proposed Sale No. 68 tracts that could intersect the submarine transit lanes.
- 41.5 There is no record of submarine or missile collision with an oil platform. The probability of such an occurrence is considered remote.
- 41.6 The military has reviewed Proposed Sale No. 68 area and has requested minor changes to the Military Stipulation No. 1 (Section I.B.6). In addition, BLM is reviewing information from the Department of Defense which arrived too late to be included in the document.

June 25, 1981

Pacific OCS Office (BLM)
1340 West 6th Street, Room 200
Los Angeles, CA 90017
Attn: E.A. Manager

Gentlemen,

We have read with interest the Draft Environmental Impact Statement for Lease Sale No. 68. We have one comment, relative to the transportation systems, section III.C.7.a (p. 3-98, Vol 1).

Your statement regarding the commercial merchant vessel traffic (in the 4th paragraph of item 7a) is literally correct as written. However, we believe it would provide a clearer indication of the total vessel traffic level through the Santa Barbara Channel if you pointed out that there is a similar level of traffic to the Ports of Los Angeles-Long Beach and Port Hueneme. That is, counting both directions, the vessel traffic is twice the numbers given in the EIS.

The second sentence in that paragraph should read "They projected the number of vessels serving the Ports of Los Angeles-Long Beach and Port Hueneme passing through the Santa Barbara Channel TSS on a daily basis in each direction as follows: 1980, from 12.4 to 15.7 ships per day; 1990, 13.9 to 19.3; and 2000, 14.7 to 21.7." This translates roughly to about a ship an hour through the Channel now, and at most an increase to less than double that rate by 2000.

The results of our study are documented in some detail in the report "Santa Barbara Channel Risk Management Program" prepared for the California Coastal Commission, April, 1981.

Thank you for the opportunity to review the EIS. If you have any questions regarding our work, please don't hesitate to call.

Very truly yours,



W. Phillip Reese

WPR/cs

42.

Section III.C.7 of the EIS has been revised as suggested.

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Response to SAN DIEGO HIGHWAY DEVELOPMENT
ASSOCIATION, INC.

SAN DIEGO HIGHWAY DEVELOPMENT ASSOCIATION, INC.
c/o University Club 1333 Seventh Avenue
San Diego, California 92101

43.

Comment noted.

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1st Vice President
F. A. Evans

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1975 E. F. Gabrielson
1976 E. F. Gabrielson
1977 Henry W. Woods
1978 Charles A. McGowan
1979 Charles A. McGowan
1980 Thomas B. Hazard

July 13, 1981

Pacific Coast OCS Office
Bureau of Land Management
1340 W. 6th St., Room 200
Los Angeles CA 90017

Gentlemen:

At our meeting of July 13, our Association by
unanimous vote adopted the following resolution:

WHEREAS, our country is now highly dependent upon
Middle East countries with unstable governments for
much of our oil supply, and

WHEREAS, finding additional domestic sources of oil
is deemed necessary to our economic and military
survival, and

WHEREAS, it is known that large quantities of oil
are available for the taking on the outer continental
shelf within U. S. waters off the coast of Southern
California, and

WHEREAS, objections raised by environmentalist to oil
drilling in these areas have little or no relation to
scientific fact,

NOW, THEREFORE, the San Diego Highway Development
Association applauds the Bureau of Land Management's
proposed sale of OCS Area 68,

And urge quick consummation of any agreements with
oil companies which will open this abundant oil field
for our country's use.

Respectfully submitted,

F. A. Evans
F. A. Evans
1st Vice President

FAE:b

Directors
Tom Hazard
Charles A. McGowan
V. Earl Roberts
John M. Robinson
Howard Thomas
Henry W. Woods
Immediate Past President
Tom Hazard

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Advisory Board: William O. Cotton, L. E. Cramer, Russ Crane, E. F. Gabrielson, Jim Reading, Ralph Richey,
E. H. Schroeder, William Wallace, Roger Woolley

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Santa Barbara Indian Center

July 29, 1981

Bureau of Land Management
Lease Sale No 68

To Whom It May Concern:

On the contemplated drilling of Pt. Concepcion on section tract # 9, we oppose any activity undertaken in this area which is the Chumash temple of worship. We agree with the Draft EIS evaluation of cultural resource impacts that would disrupt visual, auditory and terrestrial senses of ceremonial use during our visits to Pt. Concepcion and surrounding regions. Industrialization of this area is already dramatically interfering with our ceremonies, further interference cannot be tolerated. We are protected in our religion by P.L. 95-341 and the 1st Amendment to the U.S. Constitution that guarantees free exercise of our ceremonies.

Nickolas DePa

is illegal, for some families the intertidal zone is a major source of protein. Thus, an oil spill in any part of the Bight presents a potential impact to gathering activities. The risk is moderate to high.

In addition, any oil spill and associated cleanup activities in proximity to areas of spiritual concern to Native Americans would be considered by them to be spiritually intrusive. This type of intrusion is thought to be limited to the Santa Barbara Channel area. In this area, visual and auditory intrusion is of concern because there are several locales of spiritual importance to Native Americans. This type of impact has been a problem from previous industrial development. Point Conception, which has been nominated to the National Register of Historic Places, is particularly vulnerable to additional impact because of its great importance as a sacred site in Native American religion, and because it has previously been subjected to impact from industrial development. Since not all of the areas sacred to Native Americans are known to others, it is not possible to completely assess the potential impact of offshore oil and gas development on this type of resource. However, the only tract in Sale No. 68 with a predictable potential for impact on Point Conception is Tract No. 009.

ii. Mitigation: Proposed Lease Sale No. 68 encompasses 1,112,975 acres of seabed, much of it in very deep waters. The vast area and depths involved make any archaeological search very difficult. For these reasons archaeological investigation on the Pacific OCS is confined to the most sensitive area; i.e., water < 120 meters deep. The primary method of investigation is remote sensing (magnetometer, sidescan sonar, subbottom profiler). On leases in water < 120 meters deep, BLM requests that USGS invoke the Cultural Resources Stipulation, which requires a cultural resources survey be conducted in conjunction with the usual geohazards remote sensing survey. The methods by which this stipulation is implemented are specified by a periodically updated Notice to Lessees (NTL). NTL 77-3 is currently in effect. Recent (May 1980) industry prices for the cultural resources surveys range from \$1500 to \$17,000 per 9 square mile tract; mean survey price is \$7125.

If leased, the following tracts are expected to require invocation of the Cultural Resources Stipulation: 9, 10, 13, 19, 43, 44, 49, 50, 51, 54, 55, 57, 58, 60, 61, 62, 66, 67, 68, 71, 72, 73, 74, 75, 78, 79, 80, 81, 82, 83, 84, 85, 86, 98, 99, 100, 101, 102, 103, 104, 107, 124, 130, 139. However, it is expected, based on past experiences with sales in this region, that most of the above tracts will probably not be leased under this proposal.

If potential cultural resources are identified as a result of the remote sensing survey, BLM will request that the operator: 1) avoid the object(s), or 2) identify the object(s) through additional investigation (e.g., remote camera, diving archaeologists) as something other than a cultural resource. Based on past experience with cultural resources in this area, BLM expects in most cases the lessee will choose the former alternative, avoidance. It is generally possible to easily avoid any potential resource without any necessity for further identification. Protection of cultural resources by avoidance is considered a professionally appropriate form of mitigation.

analytical techniques improve, so does the amount and quality of information recoverable. Sites left undisturbed until more advanced technology and methodology by future archaeologists is used will likely yield greater data rewards. Similarly, conservation work by which materials and artifacts are restored improves steadily.

During the life of the proposal, the visual environment of some listed or eligible National Register sites may be adversely affected, but this is not expected.

Gathering activities by contemporary ethnic groups could be decreased as a result of oil spill(s). There is a moderate to high expectation of this type of impact, although the results of such an impact are expected to be low to moderate. Such impacts are expected to be temporary, but the indirect effects on the individuals and groups engaged in such activities could be long term.

Depending on the location of industrial activities resulting from this proposal, the adverse effects on areas sacred to Native Americans is expected to be low to moderate.

d. Cumulative Impacts: Cumulative effects are expected to be most severe in the Santa Barbara Channel region, where oil and gas exploration and development has occurred with relatively high intensity. The more intense and extensive the industrial activities, the greater the effect on cultural resources. The greatest cumulative effect on a terrestrial resource is predicted for Point Conception, which is important to contemporary Native Americans for cultural and spiritual reasons. Point Conception has been previously impacted by both terrestrial and marine development. Native American concern is quite high that additional impacts be avoided. The net effect of additional OCS impacts on cultural resources will, in part, be dependent upon the application of mitigative efforts. Some minimal positive effects could result from a general increase in the knowledge of cultural resources because of survey work conducted in conjunction with exploration and development.

44.

Comment noted.



SIERRA CLUB

OFFICE OF THE SOUTHERN CALIFORNIA REPRESENTATIVE

2410 Beverly Boulevard, Suite 2
Los Angeles, California 90057
(213) 387-6528

August 14, 1981

Comments on the Draft Environmental Impact Statement on the Proposed Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California (OCS Sale No. 68)

Sierra Club has 225,000 members throughout the United States. Approximately 40,000 of these members live in Southern California. Sierra Club has been active in energy and coastal issues for many years and many of our members have a particular interest in Outer Continental Shelf (OCS) issues. We would like to present our comments regarding the Draft Environmental Impact Statement on the Proposed 1982 OCS oil and gas lease sale offshore Southern California (OCS Sale No. 68).

It is a real tragedy that the Federal Government continues an antiquated policy of developing our non-renewable energy sources as rapidly as possible while almost totally ignoring our renewable sources of energy. Drastic cuts in energy conservation funds combined with a zero funding level for the Solar Bank are prime examples of our country's commitment to continue its reliance on finite and non-renewable energy sources.

The frantic pace at which these OCS leases are being offered is interesting in light of the fact that Industry has not yet explored hundreds of offshore areas it has already leased from the federal government. Last October, then Interior Secretary Andrus chastised the industry for wanting more federal land leasing while "holding millions of acres without any effort to explore these leases." Andrus said industry held "nearly 700 offshore leases with no development." (Oil and Gas Journal, Nov 3, 1980)

We cannot afford to always subjugate the environment to our energy demands. We must try to balance our need to provide energy with our need to protect our environment.

In Southern California we are blessed with unique coastal resources. There is a multitude of flora and fauna, including endangered species, here that deserve to be adequately protected. This area is heavily used by people and the DEIS reports that nearly 80 million users attended Southern California beaches during fiscal year 1979-1980 (3-88). In addition, tourism is recognized as one of the largest industries in Southern California. In 1978, visitors

-2-

spent over \$7.2 billion here (3-90) and, of course, many of these tourists come here for our world-famous beaches. In addition, southern California supports an important fishing industry. These important values should not be jeopardized by increasing lease sales in southern California when the cumulative impacts have not been adequately evaluated.

The integrity of the Channel Islands National Park and the Channel Islands National Marine Sanctuary would be violated if oil leasing is allowed to take place in this unique ecological system. The 6-mile boundary around the islands might be adequate to protect the islands themselves. However, we believe it essential that a buffer area be established adjoining this sanctuary where no leasing be permitted. This is the only way that the full National Park and Marine Sanctuary will be adequately protected.

Since a major objective of the marine sanctuary is to preserve the unique resources (including intertidal, subtidal, benthos, pinnipeds, seabirds, recreational, and cultural values), oil leasing on these tracts should be prohibited. The marine sanctuary is adequately discussed in the DEIS and we believe after reading the low percentage (3%) of oil that would be in the tracts located in the Sanctuary and the reasons why this productive biological community was originally protected, there is no question that the tracts that are located in the Sanctuary must be deleted from any lease sale.

We are especially troubled by the prospects of another lease within the waters of the Southern California Bight (SCB) in which at least six federally listed endangered whale species (blue, finback, gray, humpback, Sei, and sperm) are known to occur. The endangered Pacific right whale has also been sighted in California offshore waters. The southern sea otter is another threatened species that is highly susceptible to oil contamination that causes a loss of insulation and subsequently hypothermia (3-111).

Although a summary of an oil spill risk analysis model is discussed in the DEIS, we continue to be troubled by the lack of any effective oil containment cleanup mechanism. The DEIS says the many variables associated with an oil spill make a generalized discussion of oil spill containment and cleanup difficult (4-16). We agree, but this still does not hide the fact that there is still little capability available to handle a major oil spill.

We are pleased to note that the DEIS states "there is presently more oil spill equipment than could readily be used on even a major oil spill." Unfortunately, as the DEIS notes: "Assessing the effectiveness of clean-up, in the case of a major spill, is difficult." Although the DEIS states that most of the present equipment and techniques for clean-up were not available at the time of the 1969 Santa Barbara spill, we are not convinced that the "present equipment and techniques" are any more effective than the inferior methods of containment and clean-up that were used in 1969. The DEIS quotes Captain Charles R. Corbett (U.S.

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Coast Guard) as saying that containment and cleanup equipment is expected to be successful "in 8 to 10-foot seas and in winds of at least 20 knots." We question this statement and see no proof of its accuracy. We believe the issue of oil containment and clean-up must be discussed in more detail in the final EIS.

There is insufficient data to demonstrate the acute toxicity that drilling fluids may have on sensitive California marine species. With regards to chronic toxicity, the DEIS information about these discharges is unavailable. This is a serious concern that has to be fully evaluated before this lease sale should proceed. We are particularly concerned about the increased levels of barium, chromium, copper, lead and mercury sediments around drilling platforms. No one has researched the long-term effects of these metals from drilling fluids.

Long term chronic discharge may be more significant than even spills or other acute discharges. Like many contaminants, petroleum has been found to cause chromosome aberrations. Little is known about the chemical nature of weathered petroleum and the conversion of petroleum. The metabolic fate of petroleum products and their effect on marine organisms has not been evaluated. Furthermore, the combination of petroleum products and other pollutants might yield compounds even more toxic than the individual components. This synergistic effect of pollutants is probably the least understood of the problems resulting from petroleum in the marine environment. We should not increase the likelihood of further ecological damage in Southern California by allowing this lease sale to proceed in such a vital marine resource area before more information becomes available to minimize such impacts.

This is an area where the cumulative effects must be fully understood before FCS drilling in So. California is accelerated.

According to Dr. John L. Mohr, a noted biologist and Professor Emeritus (University of Southern California), and other biologists we spoke with, the biological sampling used for this DEIS is inadequate. For instance, there are totally unsampled areas, including areas in the western Santa Barbara Channel, that are included in this lease sale. Also, areas such as Tanner Bank and Cortes Bank with organisms with special biological sensitivity are not fully evaluated.

The tables on pages 4-18, 4-19, and 4-20, show that almost all the animals that were evaluated were estuarine or inshore forms that are unsuitable in evaluating the effect petroleum has on offshore animals.

The dispersal figures on discharges are unfortunately based on industry studies. The highly suspect industry conclusions (Western Oil & Gas Association, Dames & Moore - Cook Inlet, Ecomar - 1978, and the Lake Buena Vista Symposium's studies on the Gulf and Baltimore Canyon) are neither applicable nor reliable for Southern California's variegated coast.

The DEIS assumes that the water quality of these OCS areas in Southern California is the same in all areas. In other words, the analysis fails to be site specific and treats the entire area as one homogeneous unit. This is contrary to fact since many studies since The Sea Off Southern California (Emery) was published in 1960, have described the variegated shelf off of Southern California. The shelf offshore is actually an underwater combination of plains, valleys, basins, and mountains, much like the terrain immediately onshore.

We are concerned about the ability of federal agencies to monitor offshore oil activity while at the same time those agencies' budgets are being cut and staff capability minimized. We understand that even now in certain lease sale areas the agencies are not equipped with adequate funds so their monitoring must be done on oil company vessels, therefore alerting any perspective violators to get their act in order before inspection. According to the DEIS, the BLM will consider environmental monitoring for the areas leased as a result of a sale. However, we believe further attention and funding must be paid to monitoring systems in which the government can make spot checks on oil company operations without warning. This should be addressed in the final EIS.

We feel that the cumulative impacts of air pollution from the lease of these tracts needs to be evaluated further. We understand that the issue of human health effects is currently being investigated. The air quality of Los Angeles is already infamous as the most polluted air in the nation. Leasing in this region, especially the Santa Monica Bay, will only intensify an already bad air pollution problem.

Although cumulative impacts of certain issues, such as water quality, are analyzed in the DEIS, there is no evaluation of the total cumulative impacts from this lease sale. This is a serious oversight since this would be the fifth lease sale on the OCS in Southern California. A thorough evaluation of these impacts must be provided before these leases should even be considered.

Sierra Club believes the leasing of these tracts in the OCS off Southern California to be short-sighted and inappropriate at this time because of the very limited potential of these leases to even help meet our energy demands. The DEIS makes a good start at looking at conservation and other renewable energy sources to meet our energy demands. We must always weigh the benefits of increased energy production against the potential to despoil our environment. In this case, we feel that the destruction of this area's marine environment, coupled with the significant degradation of water and air quality, should not be encouraged with this lease sale. We therefore support cancellation of OCS Lease Sale #68 at this time.

Responses to SIERRA CLUB,
OFFICE OF THE SOUTHERN CALIFORNIA REPRESENTATIVE

- 45.1 The EIS has been revised to show examples of renewable sources of energy.
- 45.2 Comment noted.
- 45.3 Cumulative impacts are addressed in the EIS. The comment does not indicate specifically which cumulative impacts to the fishing industry need to be addressed that have not already been addressed.
- 45.4 Comment noted. No additional buffer has been considered in the FEIS.
- 45.5 Comment noted. Alternative 2 addresses deletion of tracts in the Sanctuary.
- 45.6 Comment noted.
- 45.7 Refer to response 15.1.
- 45.8 See response 18.48.
- 45.9 There are some data demonstrating acute toxicity to California species of marine organisms. These data are referenced in Sale No. 53 FEIS and in the FEIS for Proposed OCS Lease Sale No. 68. BLM baseline studies in the Southern California Bight have shown levels of barium, chromium, copper, lead, etc. in sediments are elevated in some areas. The sample sites did not occur at platform locations.
- 45.10 The comment accurately points out that long-term chronic discharges of various effluents may be more significant than short-term (acute) spills. It is also true that synergistic effects are little investigated and that the combination of petroleum products and other pollutants may or may not yield more toxic effects than either one by itself. The comment is inaccurate in claiming that little is known about weathered petroleum, its metabolic fate, or its effects on marine organisms.
- 45.11-12 Regardless of the giant strides made in the BLM-sponsored studies, the information on the biology within the Bight is incomplete. We have exerted

effort in incorporating the available information into our EIS according to the requirements of NEPA.

- 45.13 The Lake Buena Vista Symposium was composed of reputable scientists from industry, academia, and government. The figures quoted represent the results of available quantitative studies. If there are contradictory data, please bring them to our attention.
- 45.14 The EIS has been revised as suggested to reflect the "variegated" water quality conditions. See Sections II.B.1 and IV.A.5.
- 45.15 Comment noted. Also see revision of Section I.B.4, Environmental Studies.
- 45.16 POCS Technical Paper No. 81-7 presents a detailed discussion of the potential air quality impacts associated with Proposed Lease Sale No. 68 and cumulative impacts of all proposed oil and gas development for the Southern California offshore area (see Table VI-4). Long-term effects of inert pollutants were found to be insignificant. Some increases in short-term concentrations of primary and secondary pollutants were observed for worst-case scenarios developed for this study. In most cases, these increases are less than the DOI regulation significance levels. However, any increase in concentration of pollutants for which an area is designated as nonattainment would be of importance to local air quality agencies.
- 45.17 The EIS cumulative impact sections have been revised to more adequately address the cumulative impacts of OCS leasing in the Southern California Bight. "Cumulative" includes OCS activity anticipated to occur as a result of Proposed Sale No. 68 and prior OCS lease sales. In addition, oil and gas activity in State tidelands and major Federal projects proposed/ongoing for the area are included.
- See also response 18.19.

135 Miramar Avenue
Santa Barbara, Ca.
11 August, 1981

Response to SOUTH CENTRAL COASTWATCH

46. Comment noted.

Pacific OCS Office (ELM)
Attn: E. A. Manager
1340 West 6th Street, Room 200
Los Angeles, Ca. 90017

Re: DEIS for OCS Lease Sale #68

Dear Pacific OCS Office (ELM):


South Central Coastwatch is an organization created to watchdog the working of the Coastal Commissions in the permit and planning process. We concentrate on Ventura, Santa Barbara, and San Luis Obispo Counties, and we strongly object to the inclusion of tracts in the Channel Islands Marine Sanctuary as part of Lease Sale #68.

The purpose of the Marine Sanctuary is to give special protection to the area. Many of us hoped that the entire Channel would receive sanctuary designation. To lease part of the area finally determined to be worthy of sanctuary status is to mock that determination.

We believe that a separate EIS should be required to review the effects of oil and gas leasing, drilling, and production on the Sanctuary, in terms of its continuing ability to act as a sanctuary. We further believe that the inclusion of Sanctuary tracts is inconsistent with the California Coastal Act, especially Sections 30230, 30231, and 30232. We believe the consistency determination needs further study.

Thank you for your attention.

Sincerely,



Ann Marsak
Director, South Central Coastwatch

The Nature Conservancy

Santa Cruz Island Project
735 State Street #201
Santa Barbara, CA 93101
(805) 962-9111

July 28, 1981

To Whom It May Concern:

The largest and most topographically diverse of the eight Channel Islands, Santa Cruz stretches approximately 24 miles in length, is from two to seven miles wide, and encompasses 62,000 acres of land. Here are found examples of metamorphic, igneous, and sedimentary rock, major earthquake faults, Indian middens, fresh-water streams, creeks, and springs, and biotic communities that range from grassland to riparian woodland to coastal beaches and dunes. With its pristine coastline, two mountain ranges rising to 1,500 feet and 2,400 feet, pastoral central valley, and endemic plants and animals, Santa Cruz Island resembles a miniature continent.

Over 140 species of land birds have been identified on the island. The Santa Cruz Island Jay is representative of island endemism being larger and bluer than its mainland counterpart. Of the ten species of terrestrial mammals on Santa Cruz, the Island Fox is a well-known endemic animal characterized by its small size, daytime foraging habits and docile nature. Hundreds of seals and sea lions find refuge in the island's protected coves. The 77 miles of shoreline cliffs, beaches, offshore rocks and tidepools provide an important breeding habitat for colonies of nesting sea birds and support a wide variety of crustaceans, mollusks, and other shoreline animals and plants.

The marine environment surrounding Santa Cruz Island supports a commercial fishing industry in abalone, lobster, and sea urchins and attracts thousands of yachtsmen to its many protected anchorages.

9/10 or 55,000 acres of Santa Cruz Island have been preserved by The Nature Conservancy, a private non-profit conservation organization. Under a cooperative agreement with the Santa Cruz Island Company this property will continue to be managed as a private land preserve and used for scientific research and public education. Santa Cruz Island taken as a whole is an important remnant of pristine early California.



Western Regional Office • 450 Second Street, San Francisco, CA 94105
National Office • 1800 N. Kent Street, Arlington, Virginia 22209

The Nature Conservancy

Santa Cruz Island Project
735 State Street #201
Santa Barbara, CA 93101
(805) 962-9111

July 30, 1981

Any activity which increases the potential for damage to any one or more geological or biological elements on Santa Cruz Island also threatens to diminish the nature of Santa Cruz Island as a whole. The Marine Sanctuary surrounding Santa Cruz Island serves as a buffer to protect the island's resources and associated marine life. This buffer should remain intact as designed in 1980.

47

Sincerely,

Bob Hansen
Bob Hansen
Project Director

BH: DE

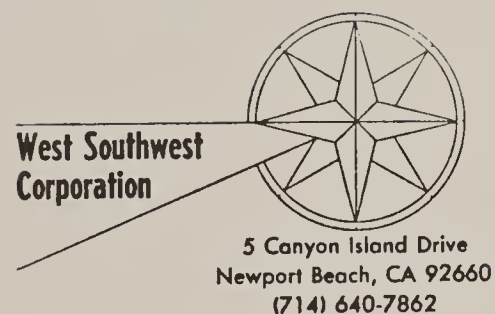


Western Regional Office • 450 Second Street, San Francisco, CA 94105
National Office • 1800 N. Kent Street, Arlington, Virginia 22209

Response to THE NATURE CONSERVANCY

47. Refer to Alternative 2, Section II.B.2.

7-284



H. H. Searls Jr.
President

Response to WEST SOUTHWEST CORPORATION

48.

Comment noted.

July 28, 1981

Pacific OCS Office
1340 W. 6th St.
Suite 200
Los Angeles, CA 90017

Gentlemen:

While we were unable to attend the July 23 meeting on offshore drilling in Newport Beach, Laguna Beach, and South Laguna, this letter expresses our concern at the continuing pressure to desecrate this lovely stretch of coast.

We have seen the Santa Barbara Channel studded with rigs, and are fearful that it can happen here.

What we leave in the ground we at least are leaving for future generations. If as a last resort such oil is needed, it will be the decision of those who must live with the results. To further wreck our coastline now, for ourselves and our children, is unconscionable.

Conservation, higher oil prices, alternative sources of energy, and if necessary a cooling of our excessive expectations is the answer, not more offshore rigs.

Sincerely,

Hank Searls
HANK SEARLS
HS:ba

48

Responses to WESTERN OIL AND GAS ASSOCIATION

(Summary of Comments and BLM Responses)

The following are the significant issues raised by the Western Oil and Gas Association (WOGA) regarding the DEIS for OCS Lease Sale No. 68 and the responses to these issues of concern. Due to the length of WOGA's comments, it was not possible to duplicate them in the FEIS. Full comments and complete responses were sent to WOGA and are available for review in the Pacific OCS Office upon request.

49.1 Proposed Lease Sale No. 68 Alternatives.

Comment: The comments from WOGA suggest that the DEIS demonstrated a preference for Alternative 2 over other alternatives and that there appeared to be no justification for this preference. Specific comments addressed the lack of justification for individual impact assessments under Alternative 2.

Response: The EIS was revised to remove any indications of preference for any particular alternative. Justifications for the assessment of impacts to specific resources were explained in the detailed responses to WOGA comments on file in the Pacific OCS Office. Some additional references and data were added to the EIS sections, where appropriate.

49.2 Oil Spill Probability Analysis

Comment: WOGA correctly comments that the conditional mean resource estimates for the Santa Barbara Channel, Inner Banks, and Outer Banks are not additive but that the predicted number of spills from this lease sale were based on additive resources thus leading to overestimation of actual risk.

Response: We realize the limitations of the oil spill analysis, but our calculations resulted from a need to use different transportation schemes for each subarea. Our calculations should be considered estimates only. Due to the uncertainty of estimating oil and gas resources (as evidenced by comments from the oil company representatives) and due to the uncertainty of predicting oil spills, the actual number of oil spills which may occur could be higher or lower. The EIS has been revised to clarify that the oil spill calculations are estimates only.

Comment: WOGA questioned the accuracy of historical spill rate data and indicated that BLM needs to justify how cumulative spill risk data in the lease Sale No. 68 area was obtained.

Response: The detailed responses to WOGA's comments are on file in the Pacific OCS Office. DOI uses the best available data base on oil spills, and is in the process of updating and refining it for the Pacific OCS Region. Cumulative oil spill data for the Proposed Lease Sale No. 68 area are based on revised resource estimates for previous lease sales in the Southern California area.

49.3

Oil Spill Containment and Clean-up.

Comment: WOGA comments that a more detailed discussion of kinds of clean-up and containment equipment needs to be included in the EIS. They also indicate some changes need to be made in the effectiveness of estuary protection and in the percentage of time sea states are such to allow oil spill equipment deployment and effective utilization.

Response: The EIS was revised as suggested to expand equipment types and availability. The effectiveness of estuary protection discussion was not changed because some controversy still exists as to adequacy of protection. The percentage of sea state allowing effective use of oil spill containment and clean-up procedures was not changed in the FEIS because the values in the DEIS agree sufficiently with the WOGA values.

49.5

Marine Traffic Safety

Comment: WOGA was concerned that the discussion in the DEIS could mislead a reader into concluding the risk of a marine accident is greater than it actually is.

Response: The DEIS was revised as suggested and details of the traffic analysis may be found in POCS Technical Paper 81-1.

49.6

Water Quality and Drilling Mud Discharges.

Comment: WOGA comments were concerned with apparent discrepancies in statements in various sections of the DEIS regarding impacts of OCS oil and gas activity discharges on water quality. Comments specifically

addressed issues of toxicity of drilling muds and cuttings, the dispersion of muds and cuttings, and the lack of sufficient justification and references for statements made in the DEIS regarding impacts from these discharges.

Response: The EIS was extensively revised to remove any discrepancies in statements by explanation of terms used in the document such as short-term, long-term, localized, and lease sale area-wide. The sections on water quality, Section IV.A.5 and Section III.A.3, were revised and expanded to include more references to muds and cuttings fates and effects (even though referenced to OCS Sale No. 53 FEIS).

49.7 Air Quality.

Comment: WOGA comments are concerned with the overall conservative approach of BLM to reactive pollutant emissions modeling. The results of the modeling and prediction of impacts on ambient ozone levels are not representative of actual conditions.

Response: BLM modeling of air quality emissions is done by state-of-the-art numerical models using data acquired in field measurements. Trajectories and impacts from all emissions, including ozone, are designed to estimate worst-case situations and thus reflect possible actual conditions, but may not reflect average or most-probable conditions.

49.8 Marine Biology.

Comment: Comments from WOGA suggest the DEIS be modified to include more data to substantiate conclusions drawn about effects of oil on marine life.

Response: The discussion in the Proposed Lease Sale No. 68 DEIS includes much of the current literature on effects of hydrocarbons. In addition, reference is made to Lease Sale No. 48 FEIS, wherein additional references and justifications for conclusions as to oil effects may be found. The discussion in the EIS for Proposed Sale No. 68 does indicate alternatives and sometimes contradictory results from effects research and areas in which little is known.

49.9 Coastal Economy and Demography.

Comment: The Curtis-Harris model is criticized in comments from WOGA for its inability to predict sub-

county level impacts and non-discrimination between onshore and offshore petroleum development requirements. It is further suggested that the "alternative analysis" discussion be expanded.

Response: The Curtis-Harris model was chosen for the analyses because it has a large data base and employs many complex relationships in predicting economic and demographic conditions. No evidence is available which indicates the "alternative analysis" used in the DEIS is superior to Curtis-Harris and therefore the former was not emphasized in the EIS. The Blayney-Dyett (1981) study results were incorporated into the EIS analysis as suggested in the comments.

49.10 Cultural Resources.

Comment: WOGA comments that the DEIS substantially overstates impacts of oil and gas exploration and development on cultural resources and suggests that the description of cultural resources focus on significant resources on the OCS.

Response: The DEIS was revised to present a clearer representation of resources in the Proposed Sale No. 68 area. Because of limited data availability, exact locations of cultural resources and determinations of significance of many resources are difficult or impossible at this time.



WHALE CENTER

August 7, 1981

Bureau of Land Management
Pacific OCS Office
1340 West 6th Street, Room 200
Los Angeles, CA 90017

Dear Sir:

The Whale Center is a national whale conservation organization reaching some 6,000 people. One of our objectives is to monitor whale habitat. We have been a major participant in advancing the federal marine sanctuary program as well as reviewing and participating in most of the OCS oil and gas sales.

After reviewing the Draft EIS on Lease Sale 68 (Point Conception to the Mexican Border), I submit the following comments.

The Whale Center is vigorously opposed to inclusion of the 37 tracts within the boundaries of the Channel Islands Marine Sanctuary. The basis for offering these tracts appears to us to be outside the law, for we think the suspension of the hydrocarbon prohibition within the sanctuary boundaries was inconsistent with the intent and procedures of the Marine Protection, Research and Sanctuaries Act of 1972, as amended. Further, the procedure followed fails to comply with the Administrative Procedure Act. In addition, the suspension does not constitute a "major rule" required to validate the use of Executive Order 12291.

For the above reasons, the legality of offering the 37 complete and partial tracts within that sanctuary is in grave doubt. Considering the very minor amount of oil and gas to be expected from those tracts, there can be no justification for offering those tracts. The fact that those tracts were offered is proof that the marine sanctuary program is sorely needed. The natural, scenic, recreational and other public interests already well documented in the sanctuary designation process merit the protection from intrusions of harmful activities within the boundaries. It is clear that only through sanctuary status can these values be recognized and protected. It is obvious that the BLM OCS program is not capable of balancing the public interest in identifying

50.1

Page two

and protecting the public's special interest in unique areas while it promotes oil and gas exploitation.

We support alternative 4, delay of the sale. It is the only responsible course because there is yet no adequate data base on which to make sound decisions. While there are many research projects underway to answer many of the questions about the effect of spilled oil on the marine environment and its living components, the results of the research will not be available and evaluated until well after the decisions are made. It is not in the public interest to make decisions with an inadequate data base.

50.2

Open ocean oil spill containment and cleanup capability has not advanced to the point where the public can have confidence that the harmful effects from oil spills can be significantly reduced.

50.3

More careful attention should be paid to the problem of discharges into the marine environment. More research is needed into the impacts of discharges into the ocean from dumping of drilling muds and cuttings. Attention should be directed to study of optional disposal methods.

50.4

Of particular concern to the Whale Center is the fact that no agency of the federal government is evaluating the cumulative impacts on migratory species from oil and gas development. In a few years almost the entire coastline of western North America will be dotted with oil and gas rigs. Canada and Mexico may also develop any hydrocarbon deposits they may have, although this is not clear at present. We believe that failure to address the cumulative impact on migratory species is probably in violation of the National Environmental Protection Act. The entire migratory range of the gray whale is involved.

50.5

We are also concerned that the federal government is trying to avoid working with coastal states to balance the variety of public interests involved in the OCS. This failure is contrary to the Outer Continental Shelf Lands Act as amended.

50.6

It is clear that alternative 4 is the only rational choice. Any oil and gas deposits within the sale area will still be there if there is delay. There is nothing to be gained by hasty decisions.

Sincerely yours,

Maxine McCloskey

Maxine McCloskey,
Executive Director

Responses to WHALE CENTER

- 50.1 Comment noted. NOAA is currently conducting a regulatory impact analysis of the regulations pertaining to hydrocarbon activities within the Channel Islands and Point Reyes-Farallon Islands Marine Sanctuaries. The study is expected to be completed by March, 1982 and the status of the regulations resolved.
- 50.2 Comment noted.
- 50.3 The California Coastal Commission is conducting a study to determine the adequacy of the oil spill cleanup responses on the California coast. They have completed a preliminary draft of Phase I and have started Phase II of the study. Phase I concerns the capability of Clean Seas. Phase II will involve using this same method to concurrently evaluate four other California oil spill cooperatives. The final report, Phases I and II, is expected to be completed (final) by January, 1982.
- 50.4 Comment noted.
- 50.5 The BLM Alaskan OCS Office plans a FY82 study, the objectives of which are to correlate effects of drilling noise and seismic acoustical noise to alterations in migratory pathways and habitat usage by gray whales. This study will be closely coordinated with the Pacific OCS Office.
- A statement discussing potential cumulative impacts of OCS oil and gas development upon gray whales has been included in Section IV.C.7 of the EIS.
- 50.6 Section I.B.2 lists the major steps in the leasing process at which the State was and will be consulted.

8-10-81

Response to BURDICK, JAY D. and MARIANNE

Dear Mr. Manager,

We are opposed to lease sale #68. This area is already threatened by pollution from harbors and overuse. The migration routes of the Calif. Gray Whale would be disturbed by the presence of oil drilling platforms, and many species of birds, pinnipeds, cetaceans, tidelpool life, and fish would be threatened in the event of an oil spill. We do not want a repeat of the famous Santa Barbara spill.

Thank you,

Jay D Burdick

Marianne Burdick

4080 W. 1ST ST SP138

Santa Ana CA 92703

51.

Comment noted.

51

526 N. Foothill Blvd

Ojai, Calif

Aug. 4, 1981

U. S. Bureau of Road Management,
Los Angeles, Calif

Dear Sirs -

Re. Air Issues.

I would think that arguing
for air superiority is preferable to the
proliferation of nuclear technology as
a source of power.

The life of an oil well is short,
and is relatively harmless to the en-
vironment compared with the dis-
astrous potential of nuclear develop-
ment.

(It may give us the precious
time we need to develop other safe
sources of power.)

Sincerely

Rick C Chase

Response to CHASE, RUTH C.

52.

Comment noted.

August 10, 1981

Pacific Outer Continental Shelf Office,
Bureau of Land Management
1340 W Sixth St., Room 200
Los Angeles, Calif. 90017

Dear Friends,

I am writing to express my concern regarding proposed Outer Continental Shelf Lease Sale No. 68.

Drilling on Continental Shelf would be almost as disastrous as drilling in the Santa Monica Bay itself.

I cannot stress enough that we desperately need the clean ocean air to disperse the choking, tearing smog we have here in Southern California. If this air becomes polluted, blowing to wards shore, meets the polluted air already on shore the result could be disastrous.

On a visit to Santa Barbara my husband and I could hardly breathe and he had trouble seeing well enough

to drive away. This condition continued until we were far inland; of course there are other serious hazards but air pollution is the most serious, in my opinion.

Most tragedies are caused from lack of planning or incomplete planning. Please don't let it happen here.

Most sincerely,

(Mrs.) Betty M. Fester
220 San Vicente St.
Apt. 207
Santa Monica, Calif. 90402

Response to FESTER, BETTY M.

53. Comment noted.

August 11, 1981

Response to HANTMAN, DAVID I.

DAVID I. HANTMAN, M.D.
201 OCEAN AVENUE
SANTA MONICA, CALIFORNIA 90402

54.

Comment noted.

Pacific OCS OFc. (LM)
Attn: E.A. Manager
1340 West Sixth St., Room 200
L.A., Cal. 90017

I wish to make a statement regarding the OCS Lease #68. I was born in Los Angeles and have spent most of my life here. I object to the sale of this lease. It is not in the best interest of the great majority of those who reside in Southern California. In fact I do not believe it is going to significantly improve the economy of this country. Figures show that the amount of oil that can be reliably recovered is a relatively small amount compared to utilization. We waste a considerable amount of energy in this country. We should waste less and conserve more.

Such decisions should be left or at least significantly include the state and local decision making process. Only a minority of states front the oceans, particularly the Pacific Ocean. The Pacific Ocean is crucial to the recreational, ecological, economical, and aesthetic well-being of this state, particularly in Southern California, where we are the second most urbanized area in the United States. We are already overly congested and polluted. We have already lost most areas to development. It is now imperative that the welfare of those who reside in Southern California be considered and that they have a choice in this matter.

The quality of the water in Southern California has steadily decreased since I was a child over 30 years ago. It is grossly dirtier from Orange County to Santa Barbara. Oil wells along the Coast can only continue to decrease the quality of the water. The pollution from the platforms, the drilling, and the traffic generated by the ocean going vessels transporting the oil and equipment can only make it worse. Studies have already shown that the concentration of hydrocarbons is higher in Southern than in Northern California waters, as reflected in measurements of hydrocarbons from mussels taken from these two regions. Even the Oil Companies themselves admit the possibility of greater concentrations of hydrocarbons with additional wells. This does not take into effect the increased possibility of a blowout, particularly if a well-placed earthquake disrupts anyone of these wells. Another problem is the increased possibility of accidents, particularly of ocean going vessel colliding with one of the wells at night. Southern California is already overcongested and overpolluted. There is no way we can avoid more of this if we allow lease sale #68 to go through.

54

Sincerely,

David I. Hantman
David I Hantman MD

7-293

33891 Copper Lantern
Dana Point, Ca. 92629
July 17, 1981

Pacific OCS office
1340 W. 6th St., Suite 200
Los Angeles, Ca.

Dear sirs,

I am writing to protest
the proposed off shore oil drilling.
Do you really have to let the
oil companies ruin one of the
few remaining beautiful coasts?

They've made the coasts above
Los Angeles ugly with their rigs,
and covered the beaches with
blots of oil and tar. Maybe
we need oil, but there are
alternatives, ^{and} when a
decent environment is gone,
it's gone.

Please don't spoil our coast

Sincerely,
Phyllis Molandra
J. Molandra

Response to MOLANDRA, PHYLLIS AND J.

55.

Comment noted.

55

2180 Ward Way
Redwood City, CA 94061
July 11, 1981

Response to McPHERIN, DAVID

56.

Comment noted.

Department of the Interior
Bureau of Land Management
Sacramento Office Federal Building
2800 Cottage Wy.
Sacramento, CA

Gentlemen/Ladies.

I am protesting the issues of oil well drilling off of the northern California coast and the possible allowance of motorcycle/dirt vehicle activity of areas previously declared "off-limits." California is one of the most beautiful areas in the world, and these actions would be detrimental to this beauty. Increased usage of gasoline burning engines only creates a greater need for oil, which helps cause the offshore drilling. Increased off-road activity would plunder the magnificent countryside, which can be admired for centuries, and would increase fire hazard, the fire department has their work cut out already.

Offshore drilling can very easily pollute the shore and beaches, kill the otter, seals, and other, and be a complete hazard to the fishing industry, not to mention being an eyesore (I use Santa Barbara, with her oil-ridden beaches, as my criteria). I have nothing against fair oil usage, but I strongly encourage development of peaceful, clean and potentially efficient alternate sources: solar, wind, geothermal, etc. With a variety of these self-reliant sources, all operating simultaneously in their appropriate areas of the country, we won't need to drill extensively and rely upon dwindling oil so much. Then we have various backup energy systems in case one fails in its area; it is wise to be flexible and have alternatives.

I encourage your reconsideration of these destructive issues, where the damage may be irreparable.

Very truly yours,

David McPherin

David McPherin

56

7-295

Pacific OCS Office,
Bureau of Land Management
Department of the Interior
Attention: E. A. Manager
1340 West 6th Street, Room 200
Los Angeles, CA 90017

Dear Sir:

I should like to make the following Comments on proposed
OCS Oil and Gas Lease Sale 68.

In support of the position of the Sierra Club against holding Lease Sale 68 as proposed, I note the following:

Lack of knowledge noted in *Lavenberg and Earle, 1975, Recommendation for baseline research in Southern California relative to offshore resource development, Proceedings. S. C. Acad. Sci., Special Publ., pp. 258*, was addressed by surveys under contract with POCSSO:BLM. There are two salient facts about these studies: 1) they left large areas, including significant ones for proposed sale #68 completely unexamined, others with samplings far apart, and essentially all without repetitions; since there have not been subsequent surveys, nothing is known for critical areas and nothing of the changes taking place is known precisely for any area; 2) significant studies that were done have not been regularly published (in journals or series or as separate monographs). Those theoretically available are listed in NTIS under the heading, Science Applications, Inc. Reports (or Final Reports) of Principal Investigators. Thus studies costing more than ten million dollars, some at least of excellent quality and containing very important research, are unknown alike to the marine scientific world and to the American citizens who have paid for them and should have them available for judging the suitability of what has been done under OCS #48 and what is proposed for OCS #68.

57.1

2.

Among deficiencies of proposal for OCS #68 are the tendency of BLM to accept uncritically the poorly executed industry studies on such things as dispersal and toxicity of discharges as meaningful and correct while ignoring contrary evidence (cf. Thompson, 1980, *dissertation*; John Proni, NOAA, Miami; Mariani, 1980, *LBV Symp.*) that discharges may have effects for miles and evidence that bioassays and monitoring techniques superior to industry's flawed ones are already in use (cf. ICES document on marine monitoring; NMFS, La Jolla studies of sensitivities).

57.2

Further, BLM has relied on quick, unseeing or grossly coarsely seeing methods (fly-by, scuba-walks, submersible scan, video-scan) which do not and can not perceive 1) most animals, and 2) all the animals about which scientists have expressed concern.

57.3


BLM is required to weigh prospective losses as well as gains. It has not put properly in the balance the extraordinary richness shown by its own studies (Smith et al. and Fauchald & Jones, of U. S. C.), the unique forms (as *Crania californiana* Stillman Berry and *Dimya coraliotis* of the same author, which have been taken only once), the nearly unique (such as the strange *Lamellibrachia*, other pogonophorans, and solenogasters), the remarkable survivals ("Pleistocene" foraminiferans and "Paleozoic" mollusks), and the many other organisms of importance to various sorts of people, all of which may be harmed. In the balance must go not just the petroleum possibilities (however many days' supply may be anticipated), but the stakes of commercial fishermen, of sports fishermen and others concerned with recreation, of the kelpers, of education and science (the Rechnitzer report, though old and out-of-date, is reliable as a rough index), and of posterity; the areas in question constitute a very special group of resources.

57.4

3.

The proposed OCS #68 plan does not address the stakes evenly and adequately, does not make proper stipulations on the use of critical areas, and does not provide for close monitoring, effective reporting, or proper alerting of concerned communities. Absent fair weighing of the public's legitimate interests, the proposed OCS #68 sale should be set aside.

Yours truly,


 John L. Mohr, Ph. D., U. C., 1939
 Professor emeritus,*
 Biological Sciences,
 University of Southern California

3819 Chanson Drive
 Los Angeles, CA 90043
 14 August 1981

xc. Sierra Club
 Don May, FOE
 Fred Eissler, Scenic Shoreline
 Alexander, L. A. TIMES
 usw.

*for purpose of identification only.

Responses to MOHR, JOHN L.

- 57.1 Studies conducted under contract to BLM are indeed available. See also response 45.11-12.
- 57.2 The references in the comment are, except for Thompson's 1980 dissertation (actually 1981 and not peer reviewed or yet published), referenced in the Sale No. 53 EIS. Evidence for toxicity is presented in several sections of the Proposed Sale No. 68 EIS (Sections IV.A.1, IV.C.1, and IV.C.3).
- 57.3 Comment noted.
- 57.4 Species mentioned are included in Section III.B.2 and in Section IV.C.4 with reference to Santa Rosa-Cortes Ridge.

Herbert H. Neuman
1106 Lindendale
Fullerton, Ca. 92631
June 12th, 1981

Response to NEUMAN, HERBERT H.

Bureau of Land Management
Pacific Coast O.C.S. Office
1340 W. 6th St.
Los Angeles, Ca. 90017
Att. Mr. Bill Grant

Dear Mr. Grant:

I have heard that certain people are resisting the sale of some offshore leases because it would damage fishing and tourism.

I have first hand knowledge about the Santa Barbara area where hundreds of wells have been drilled offshore. There was no damage to fishing from the offshore drilling or production, in fact the fishing improved, especially around the platforms. Sport fishermen still anchor around the platforms to get better fishing. There has been no damage to tourism. Tourists have no objection to the platforms or the wells.

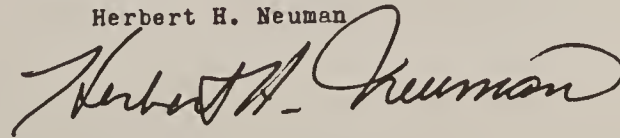
58

There was one blow-out, a number of years ago, which was caused by wrong procedures, and which would not happen again because better safety rules are now enforced. The blow-out which occurred caused a considerable mess, but was soon cleaned up.

There is as much danger of a spill from a disaster to a tanker importing oil, as there is danger of a spill from an accident at a well.

Sincerely yours,

Herbert H. Neuman



58. Comments noted. Beneficial impacts of platforms to fishing are indicated in the EIS.

7-298

July 31, 1981

Responses to REICHENBERG, BERYL

Bureau of Land Management
Pacific OCS Office
1340 West 6th Street
Los Angeles, Ca. 90017

Re: Comments on DEIS and Lease Sale 68

Gentlemen:

I strongly oppose inclusion of the 8 tracts in the Federal Buffer Zone, the 37 tracts in the Marine Sanctuary and tracts adjacent to or within shipping lanes in the Santa Barbara Channel as proposed in Lease Sale 68.

Leasing of tracts in the buffer zone will lead to drainage of state reserves adjacent to these tracts. Leasing of the Marine sanctuary tracts will lead to serious impacts on marine mammals and other wildlife in the sanctuary. In addition, although the DEIS minimizes hazards from leasing tracts near shipping lanes, Coast Guard information reports 39 collisions between vessels and offshore platforms between 1975 and 1978. A high percentage, 25%, of the Santa Barbara Channel tracts in Lease Sale 68 are within or adjacent to shipping lanes. Caution dictates that these tracts be deleted from the sale.

The DEIS for Lease Sale 68 estimates 1.1 oil spills for that lease sale. But fails to analyze the cumulative effects of this spill in conjunction with other spills projected for previous lease sales held in the area. It is thus apparent that the DEIS is not adequate and that cumulative impacts need to be addressed.

I, therefore, urge that the FEIS contain cumulative impact analysis for the Channel and that tracts within the Federal Buffer Zone, Marine Sanctuaries and shipping lanes in the Channel be deleted from the Lease sale.

Sincerely,

Beryl Reichenberg

Beryl Reichenberg
308 Longview Lane
San Luis Obispo, Ca. 93401

59.1

Comment noted on Marine Sanctuary. The Adjunct to the Santa Barbara Channel Ecological Preserve (Buffer Zone) is discussed in FEIS in Alternative 3. Also see response 11.12 concerning drainage.

59.2

The referenced section indicates concerns for large numbers of service boat accidents with fixed platforms (1975-1978 : 39 collisions). Investigating the reports and source (Safety and Offshore Oil, National Research Council, 1981, page 216), we found that 29 of 39 collisions were attributed to personnel error and the 39 collisions resulted in little installation losses. According to Lt. J. Terveen, Eleventh District Coast Guard, all of the 39 service boat collisions were probably in the Gulf and none were reported with the Southern California area.

59.1

59.2

59.3

The cumulative expected number of oil spills for Proposed OCS Lease Sale No. 68 plus existing leases and imports is 23.2 for spills of less than 1,000 barrels. See Section IV.A.1 of the EIS.

59.3

MRS. JEAN ROSENFELD
3515 CROSS CREEK LANE
MALIBU, CALIFORNIA 90265

Response to ROSENFELD, MRS. JEAN

60.

Comments noted.

Aug 9, 1981

I would like to register my
objections to the leasing of Outer
Continental Shelf - site #18.

From what we can see of
the Santa Barbara Channel it
is plain that these platforms
have disfigured our coastline.

To extend this drilling
south to the Mexican border
would be an abomination to all of
us who live here or visit.

There is no "oil emergency"
now that could justify the
desecration of our coastline.

Yours truly Jean Rosenfeld

60

7-300

115 Opal Ave
Balboa Island, Ca
92662

Dear Sir or Madam,

We are writing to protest
off shore drilling in Newport Beach,
Laguna Beach and South Laguna.
We feel strongly about preserving
the integrity of the natural beauty
of our beaches. We are concerned
about potential danger to the
wildlife along the coast. We
feel the drilling rigs are
unsightly, and we are convinced
that the amount of oil that
such drilling would produce
would not warrant the potential
hazards to our environment.

This is a beautiful area
that millions enjoy. Please
help us keep it that way. Please!

Sincerely,

Joan M. Ross & Lee
Humphrey

61

Response to ROSS, JOAN M. and LEE HUMPHREY

61.

Comments noted.

E A RYAVEC
327 TWELFTH ST
SANTA MONICA CA 90401



4-0234885225 08/13/81 ICS IPMRNCZ CSP LSAB
2134512877 MGM TDRN SANTA MONICA CA 81 08-13 1205P EST

Response to RYAVEC, E.A.

62.

Section III.D.1 has been revised to address the relationship between drilling and the probability of earthquakes.

► PACIFIC OUTDOOR CONTINENTAL SHELF OFFICE,
BUREAU OF LAND MANAGEMENT
ROOM 200 1340 SIXTH ST
LOS ANGELES CA 90017

I OPPOSE DRILLING FOR OIL OFFSHORE OF SANTA MONICA PRINCIPALLY ON
ACCOUNT OF SUBSTRATA GEOLOGICAL FORMATION WHICH IF DISTURBED BY
DRILLING INCREASES PROBABILITY OF EARTHQUAKES. REFER TO DEEP DRILLING
FOR NERVE GAS DISPOSAL AT ROCKY MOUNTAIN ARSENAL AND CONSEQUENT
DENVER CITY EARTHQUAKES. SANTA MONICA REAL ESTATE WORTH 20 TIMES
EXPECTED OIL RECOVERY MONIES...

62

E A RYAVEC
327 TWELFTH ST
SANTA MONICA CA 90401

12111 EST

MGMCOMP

7-302

August 12, 1981

Response to SPOTTS, RICHARD

U.S. Department of the Interior
Bureau of Land Management
Pacific Outer Continental Shelf Office
Attn: E.A. Manager
1340 W. 6th Street, Room 200
Los Angeles, CA 90017

Dear Sirs:

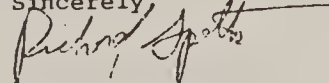
As a concerned citizen, I submit this letter as my comments and recommendations on your OCS Sale No. 68 DEIS.

At the outset, I am greatly disappointed and appalled to learn that BLM is considering OCS development on tracts (or portions of tracts) located within the Channel Islands National Marine Sanctuary. After full public debate and review, the sanctuary regulations contained a prohibition on future OCS leasing within this area. These OCS-related regulations were suspended for a cost-benefit analysis (of doubtful legality), and while no conclusion has yet been announced, BLM is proceeding to consider leasing in these disputed tracts. This is an outrageous attempt to ignore the relevant laws and regulations, and thwart public participation. And the Library of Congress study and Rep. Burton indicate that Secretary Watt may have inappropriately bullied the Commerce Department (NOAA) into suspending these sanctuary regulations.

I also disagree with the FWS "no jeopardy" opinion vis-a-vis compliance with the Endangered Species Act. The narrow focus on only leasing and exploration ignores the reality of probable, foreseeable development on the tracts leased. Once the oil companies have spent millions to lease and drill exploratory wells, the momentum and political pressures would preclude candid after-the-fact jeopardy evaluations on subsequent developments.

While none of the DEIS alternatives fully address these concerns, I suggest that--at minimum--the whole sale be delayed, and a commitment be made that no leasing occur within the Channel Islands National Marine Sanctuary. Thank you very much for considering my views.

Sincerely,



Richard Spotts

5604 Rosedale Way
Sacramento, CA 95822

63.

There are two opportunities for FWS to issue decisions pertaining to oil and gas activities and the jeopardy to endangered species. The first decision is issued pertaining to leasing and exploration. If resources are found which a company thinks warrant development, FWS issues a "jeopardy decision" prior to DOI USGS approval of a Plan of Development. If there is any change in the status of the species or project in question, FWS is again required to issue a decision. This consultation method appears to work well.

FWS biological opinions are not concerned with costs. BLM is confident that the cost to oil companies will not be the determining factor in FWS decisions.

Response to WOODS, MRS. GERALD A.

64.

Comment noted.

July 13, 81

Mrs. Gerald A. Woods
157 C Avenida Majorca
Laguna Hills, California 92653Pacific OCS Office
1340 W. 6th St.
Los Angeles, Ca. 90017

Gentlemen:

We are deeply concerned by the threat of off-shore drilling in the beautiful coastal waters of Newport Beach, Laguna Beach, and Santa Laguna. The opposition is fierce, as you must know, remembering Santa Barbara. Where is the deep concern on your part for the preservation of our treasured coastal waters.

Sincerely,

W. H. E. Woods

Mr. & Mrs. Gerald A. Woods
157 C Avenida Majorca
Laguna Hills, CA 92653



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA 22092

AUG 4 1981

Memorandum

To: Director, Bureau of Land Management *LS*
From: Acting Assistant Director for Resource Programs
Subject: Review of draft environmental statement for Outer Continental Shelf oil and gas lease sale No. 68, offshore southern California

We have reviewed the draft statement and have the following specific comments.

Page 1-1. The reference to Miller et al. is outdated and should be replaced by Dolton, G. L., et al., 1981, Estimates of Undiscovered Recoverable Resources of Conventionally Producing Oil and Gas in the United States, A Summary: U.S. Geological Survey Open File Report 81-192, 17 pages. The final sentence on page 1-1 would then read: "The U.S. Geological Survey suggests that 34 percent of the mean conventionally producible undiscovered recoverable oil resources within the United States may exist offshore to a water depth of 2,500 meters (approximately 8,200 feet), along with 28 percent of the similarly defined natural gas resources (Dolton, et al., 1981)."

65.1

Page 1-6. Is the stated transportation of oil from the Outer Banks area by barges to the Los Angeles-Long Beach ports consistent with Regional Technical Working Group (RTWG) input? At this time, the transportation issue is an active agenda item with the RTWG.

65.2

Page 1-8, par. 2. The development phase also requires docking and onshore equipment storage, service facilities, helicopters, and attendant facilities as mentioned under the exploration phase.

65.3

Page 1-9, table I.B.1.d-1. Under the "Platforms" column on the Santa Barbara Channel estimates for the year 1987, the mean estimate is higher than the high estimate.

65.4

Page 1-11, table I.B.1.d-2. The listings of drill cuttings and drill muds, in thousands of barrels, are inconsistent with page 4-34 and should be changed. The table shows no pipeline burial sediment for the Santa Barbara Channel; does this mean no burial through the surf zone, or a tie in offshore to existing lines?

65.5

Page 1-24, par. 3. The air quality regulations are codified as 30 CFR 250.57. The DEIS states that they will be codified.

65.6

Page 1-32, OCS Order No. 5. This order pertains to all production safety systems, not just subsurface safety devices.

65.7

2

Page 1-35. The discussion of the Cultural Resource Stipulation is not consistent with the GS/BLM OCS cultural resources cooperative procedures of March 17, 1978. These state in section 1.a, Lease Operation: "GS will implement the provisions of this stipulation. . . ."

65.8

Archeological/archeologist is the Federal Government's preferred spelling.

65.9

Page 1-36, last par. After "conditions," add "the extension of these surveys may be required outside of the leased block."

65.10

Page 1-37, par. 3. After "conditions," add "the extension of these surveys may be required outside of the leased block."

65.11

Page 1-45, par. 5. The exploration plan is required to include the approximate location of each well proposed, including surface and projected bottom hole locations (30 CFR 250.34.1), not just the general location.

65.12

Page 1-46, sec. h. OCS Order No. 8 should be mentioned in this section since it is the rule that implements the Structural Verification Program.

65.13

Page 2-1, par. 3, line 9. After "with a peak," add "for oil in 1990 for Santa Barbara Channel, in 1989 for the Inner Banks, and in 1993 for the Outer Banks."

65.14

Page 2-3, par. 1. We question whether evidence suggests that the cumulative effects of dumping drill cuttings resulting from Sale No. 68 and previous sales will be significant.

23.15

Page 2-4, par. 4. Information given here on marine mammals and seabirds should be referenced.

65.16

Page 2-6, par. 2, line 2. After "However," add "in the event of an oil spill. . . ."

65.17

Page 2-8, par. 2, lines 11-13. We believe that the statement, "In a rough sense, one could project that if only 50 percent of the estimated conditional mean resource were discovered impacts would be reduced approximately 50 percent," is misleading. Impacts are non-linear with respect to discovered resources.

65.18

Page 2-8, par. 3, lines 2-3. The reference to "oil and gas reserves discovered" should be changed to "resources."

65.19

Page 2-8, par. 4. Should the last sentence read, "These assumptions should not be regarded as rigid projections for future events?"

65.20

Page 2-8, last par., lines 2-3. The figures should be 223 million barrels of oil and 629 billion cubic feet of gas. These are the conditional estimates for the entire sale area.

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7-305

Page 2-8, bottom. Footnote (a) indicates 5 percent and 95 percent probabilities for individual areas are not statistically additive, yet the conditional high level of resources listed on page 2-8 above for oil and gas (482 million barrels and 1,259 billion cubic feet respectively) are the sums of the high-level estimates for individual areas from page 1-5, table I.B.1.b-2. The values for combined conditional low and high estimates are misleading and should be eliminated. This line of reasoning generates what was referred to on page 2-8 as overly optimistic resource estimates and exaggerated development scenarios.

Page 2-12, sec. 2.a.ii, lines 7-9. The indication that less than 3 percent of the oil and gas resources for the proposed Sale No. 68 area are located within the Channel Islands National Marine Sanctuary needs clarification. The values for risked mean resources for these 37 tracts are 2 percent for oil and 6 percent for gas relative to the entire sale area. The use of risked mean resource values (see page 2-15) to discuss the impacts of Alternative 2--deleting tracts within the Channel Islands National Marine Sanctuary--is in conflict with the statement on page 1-4 (par. 2) that "The analysis in this Environmental Impact Statement is developed and derived from the conditional mean resource estimates and the associated levels of related activities" The above resource values should be corrected to the conditional mean of 8 percent for oil and 15 percent for gas.

Page 2-15, table II.B.2-2. It appears that the inclusion of tract 117 as entirely within the Sanctuary may be incorrect since the adjacent tract 110 is also included and would make it improbable that the Sanctuary 6-mile boundary would stretch seaward far enough to totally include both tracts. This inconsistency is exhibited on the colored visual graphic enclosed in volume 2 of the DEIS.

Chapter III. In addition to the paragraphs on mitigation of impacts on ground-water resources through regulations and working orders (p. 1-45), we suggest that the discussion of the affected environment would be improved by the inclusion, at least by reference, of information concerning the occurrence and offshore distribution of freshwater aquifers, to provide a concept of the scope of potential impacts. For a large part of the area involved this was summarized on pages II-60 through II-70 of the final environmental statement on "Oil and gas development in the Santa Barbara Channel outer continental shelf off California," as published by the U.S. Geological Survey in 1975. Additional pertinent information is available (e.g., Poland, J. F., 1959, Hydrology of the Long Beach-Santa Ana Area, California: U.S. Geological Survey Water-Supply Paper 1471, especially pages 101, 102 and plates 5, 6, 7 and 8).

Page 3-1, last par. Basin water depths range from 400 to 2,000 meters, not 600 to 2,000 meters.

Page 3-2, figure III.A.1.a-1. Parts of the legend and map are illegible.

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Page 3-3, figure III.A.1.a-2. The following changes are recommended: under the Series column, change "Puocene" to "Pliocene," change "Daleciene" to "Paleocene," and move "Upper Cretaceous" to the Division column with appropriate extension of the line separating Cretaceous and Tertiary.

65.28

Page 3-5, Seismicity and Faulting. On line 5 change the magnitude of the 1927 Point Arguello earthquake from "7.5" to "7.3." In paragraph 4, line 3, change "(fig. 1)" to "(Figure III.A.1.a-1)."

65.29

Page 3-20. A discussion of USGS air quality regulations should be included in this section or in chapter 1. Such a discussion is not found in chapter 1, as stated in paragraph 4.

65.30

Page 3-22. Noise levels offshore beyond the 3-mile limit are also of concern. If offshore information is available, it would be worthy of mention.

65.31

Page 3-47, par. 3. Horn (1974) also mentions a third "region," the pelagic zone. There are certain species most often identified with the pelagic zone, and consequently, this area should probably be mentioned along with a few sentences describing important species, etc.

65.32

Page 3-104, Early Man in California. The first paragraph is highly speculative and basically unsupported by well documented and dated sites. The overwhelming majority of archeologists would dispute the time frame used in this section. To highlight the speculative nature of the statement, BLM's Alaska OCS office Technical Paper No. 2 (1981) states that the generally accepted time for man's entry into the New World is 10-15,000 years ago.

65.33

Page 3-105, last par. The distribution of these 582 shipwrecks is an important issue; how many are in State waters and how many are on the OCS? A related question is the significance of these shipwrecks; what percentage are of National Register quality? The question of the potential state of preservation should be addressed in this section.

65.34

Page 3-108, par. 3, line 4. This should read "estimated resources" not "reserves."

65.35

Page 3-111, par. 1. The Pacific right whale was sighted in April 1981 in the Santa Barbara Channel (National Marine Fisheries Service, personal communication).

65.36

Page 3-111, par. 3. Sea otters have recently been reported south of Point Conception (California Fish and Game, personal communication).

65.37

Page 4-7, Probability of Oil Spill Occurrence. The probability data in this section are based on assumed oil import volumes into Los Angeles harbor for a 25-year period, along with projected oil production from onshore California, State tidelands operations, and existing OCS leases and Sale No. 68 leased tracts. All of these summarized import

65.38

and production data should be referenced. We believe the development of oilspill probability cases, based on these unsupported data, is exaggerated. The DEIS states that existing OCS leases will contribute 788 million barrels over the 25-year period. This statement is inconsistent with the leased-tract production forecast prepared by the U.S. Geological Survey. As a final note, the 25-year life of the proposed Sale No. 68 fields expressed on page 4-7 is inconsistent with the 20-year life indicated on pages 1-6 and 2-1.

Page 4-9, last par. Pacific OCS Order No. 7 does not specify that 1,500 feet of oil containment boom be "required at every OCS site where any type of drilling or production activity is taking place." That order does require that pollution control equipment and materials shall be available, including containment booms. An operator must submit an oilspill contingency plan for approval by USGS with an inventory of applicable equipment, materials, and supplies.

Page 4-17, sec. c. We believe that the description of the results of diverse toxicity experiments, using different fractions of hydrocarbons and static 96-hour exposures which kill 50 percent of the organisms, contributes little towards predicting potential effects of either spills or chronic discharges. These acute short-term studies generally do not yield data relevant to exposures which the target organisms experience in the field and, therefore, indicate little except, perhaps, the relative sensitivity of the organisms to the pollutant. Additional emphasis should be placed on long-term chronic flow through exposures which would yield more meaningful results. These flow-through experiments use continuous exposures under more realistic conditions, and the traumatic "tank effect" is minimized.

The validity of the oilspill incidence predictions and the data base upon which they are predicated continues to be of concern. We are not comfortable with a statistical base drawn from all OCS areas over a period of 15 years in light of the technological changes and operating requirements which have been added during that time. The oilspill rate predictions use only volume transported and do not address location, i.e., distance from shore, coastal area, presence of ice, etc. Nor do the predictions address tanker size, age, distance traveled, etc. It is recognized that these and other parameters are under scrutiny by BLM in the BLM-Futures contract which is scheduled to be available in draft this month. We look forward to reviewing the Futures report as soon as it is available.

Pages 4-24 and 4-25, Vertebrates-Birds. Another reference that might be useful is: Stickel, L. F. and Dieter, M. P., 1979, Ecological and Physiological/Toxicological Effects of Petroleum on Aquatic Birds: U.S. Fish and Wildlife Service, Biological Services Program, FWS/OBS-79/23. 14 pages. This report states that as little as 5 microliters of number 2 fuel oil applied to mallard eggs on the eighth day of incubation reduced hatching success by as much as 90 percent.

65.39

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65.41

65.42

Page 4-25, par. 4, last 2 lines. To say that "Sea otters . . . might suffer thermoregulatory problems . . ." understates the effects of oil fouling of sea otters. It is well documented in published reports by Gerald Kooyman and Daniel Costa (Scripps) and by Thomas D. Williams (1978 report to Marine Mammal Commission, available through NTIS--PB-283 969) that the threat of oilspills was the primary reason for which these otters were listed as threatened in 1977. Nor does the document note on page 4-25 that whales, which do feed in the proposed sale area, would suffer to an indeterminant extent from ingesting spilled oil with their prey; although this possibility is mentioned briefly later in the document (page 4-85), it should also be noted on page 4-25.

65.43

The document justifiably concentrates on the potential impacts of oilspills on the marine ecosystem biological components, but it fails to note, among the human-caused disturbances to be expected, the possible effects of increased support-vessel traffic on marine mammals, both those listed as endangered/threatened under the Endangered Species Act (ESA) and those not so listed. While such effects are conjectural and unquantifiable in the absence of specific detailed development scenarios, boat/mammal collisions and near collisions as well as marine mammal "harassment"--as defined and prohibited by both the ESA and the Marine Mammal Protection Act--would be almost inevitable and should be noted.

65.44

Pages 4-28 and 4-29. The statement on page 4-28 (par. 3, line 9) that development in Federal waters includes 6 proposed platforms is not consistent with table IV.A.2.b-1 on page 4-29 which lists 5 proposed platforms, two of which, Gina and Gilda, have been set and so should not be listed as proposed. Addenda to table IV.A.2.b-1 are: (1) Belmont Offshore tideland discovery occurred in 1947 (basis for Monterey Island emplacement in 1954); (2) the first offshore platform, Hazel, was emplaced in 1958; (3) the emplacement of Platform Henry was in 1974-80, not 1960; and (4) Houchen should be Houchin.

65.45

Page 4-30, par. 1, last sentence. Note that 42 kilometers (26 miles) of pipelines will be buried, not 42 meters. A discussion of mud mounds and bottom disturbance resulting from pipeline laying might be appropriate at this point. In regard to the statement (line 16) that "Unburied pipelines could interfere with trawl fishing . . .," OCS Order No. 9 requires that "all oil and gas and other pipelines be installed and maintained to be compatible with trawling operations and other uses." In addition, the wells and pipeline stipulation (page 1-41) to be applied to all leases resulting from this sale requires that subsea installations be compatible with commercial fishing.

65.46

Page 4-32, par. 1, last sentence. "Environmental document" rather than "EIS" would be more appropriate since a variety of documents (EA's, EIS's, and EIR-EA's) may be prepared for development.

65.47

Page 4-40, par. 2, line 11. We question the advisability of referring to the proposed California air quality regulations, which may never be adopted.

65.48

Page 4-66, par. 3. A reference for Fay (1972) is not given in the bibliography.

65.49

Page 4-68, par. 3, line 14. The statement that "there is a 39 percent probability of 0.5 spills of 10,000 bbl or greater" conflicts with the table on page 4-9 showing 39 percent probability of one or more spills greater than 10,000 bbl.

65.50

Page 4-70, par. 2, line 2. What is the meaning of "(F70 m)"?

65.51

Page 4-74, par. 3, line 4. See comment for page 4-68.

65.52

Page 4-80. Sea otters should be discussed along with other sea mammals since they have been spotted in the Santa Barbara Channel and north of Point Conception and may continue their move south during the life of the proposed project.

65.53

Page 4-123, sec. ii, lines 7-10. This sentence establishes the correct procedure for invoking the cultural resource stipulation, in contradiction to the erroneous statement on page 1-35.

65.54

Page 4-123, sec. ii, par. 2. Reasons should be given for the tract recommendation; are these tracts included for prehistoric or historic remains? The GS/BLM cooperative procedures call for BLM to provide documentation.

65.55

Page 4-123, sec. ii, lines 9-10. The stipulation does not mention "in conjunction with the usual geohazards remote sensing survey." Although these surveys usually are conducted in conjunction with each other, there are special cases when they are not, and need to be separate.

65.56

Page 4-131, no. 23, line 4. This should read "The USGS estimates net recoverable resources . . ."

65.57

Page 5-6. The reference on page 3-7, paragraph 2, last line to Fischer and Berry should be added here: "Fischer, P. J., and Richard Berry, 1973, Environmental Hazards of the Santa Barbara Channel: Oil and Gas Seeps and Holocene Faulting, in Geology, Seismicity, and Environmental Impact: Association of Engineering Geologists, Special Publication, pages 417-431."

65.58

Page 5-13. The reference to Richmond should be changed to read: "Richmond, W. C., L. J. Cummings, Scott Hamlin, and M. E. Nagaty, 1981, Geologic Hazards and Constraints in the Area of OCS Oil and Gas Lease Sale No. 48 Southern California (sale held June 29, 1979): U.S. Geological Survey Open File Report 81-307, 33 p."

65.59

Page 7-1. The first line should begin "Proposed OCS Sale No. 68 . . ."

65.60

General. Throughout the EIS references are made to studies underway or completed. It would be helpful to have a table providing the name of the study, the completion date, the study availability, and the number of pages, etc.

65.61

J R Rolfe
for Eddie R. Wyatt

Responses to U.S. DEPARTMENT OF THE INTERIOR,
GEOLOGICAL SURVEY

65.1	Section I.A of the EIS has been revised as suggested.	65.12	Requirements of the exploration and development plans in Section I.B.7 have been corrected as suggested.
65.2	Transportation of hydrocarbons off the OCS is and will continue to be an active agenda item with the Pacific Regional Technical Working Group. The transportation planning efforts of the RTWG have primarily concentrated in two areas offshore Southern California: Santa Barbara Channel and San Pedro Bay/Gulf of Santa Catalina. The Intergovernmental Planning Program recommends that actual transportation planning be implemented after marketable amounts of hydrocarbon are discovered. Issues related to the transport of hydrocarbons from the Outer Banks have not, for this reason, been addressed within the RTWG forum.	65.13	OCS Order No. 8 has been included in revised Section I.B.7.
65.3	Section I.B.1 has been revised as suggested.	65.14	Section II.A has been revised as suggested.
65.4	Table I.B.1.d-1 has been revised to show the correct timing of platform placement.	65.15	The EIS has been revised to indicate that amounts will become significant in terms of total solids discharged from anthropogenic sources.
65.5	Estimates of drill cuttings and drill muds have been corrected in Table I.B.1.d-2. See also Table No. 6, POCS Technical Paper No. 81-1 for indication of assumed tie in offshore to existing lines.	65.16	Information provided in Section II.B.1 is generally accepted as common knowledge. To provide the requested references would make the EIS unnecessarily larger (see Bonnell, et al., 1975-78).
65.6	Section I.B.3 has been revised to show that the air quality regulations are codified.	65.17	Section II.B.1 has been revised as appropriate.
65.7	The EIS has been revised as suggested.	65.18	Section II.B.1 has been clarified.
65.8	This stipulation cannot be changed without a DM 655.1 meeting of Departmental agencies.	65.19	The EIS has been revised as suggested.
65.9	Comment noted.	65.20	Yes. Section II.B.1 of the EIS has been revised.
65.10	The recommended change has tentatively been made as agreed upon at the Departmental Manual 655.1 meeting on Proposed Sale No. 68 stipulations held October 5, 1981. This meeting was attended by representatives from local offices of Departmental agencies. Final approval of the change will require agreement at the Departmental Manual 655.1 meeting to be held with representatives of Departmental agencies at the national level prior to the sale.	65.21	Section II.B.1 of the EIS has been revised.
65.11	See response 65.10.	65.22	The EIS has been clarified.
		65.23	The referenced inconsistency has been corrected by employing the conditional mean resource estimates for all alternatives.
		65.24	We have checked the Sanctuary boundary. Tract 117 is virtually entirely within 6 nautical miles of the Channel Islands. The Visual graphics (Volume II) are not designed, nor intended, as legal documents. Note the disclaimer on the visuals. The exact boundary of the Sanctuary must be legally described by the Cadastral Survey Office of BLM. Tract 117 is being considered entirely within the Sanctuary pending notification from Cadastral Survey.
		65.25	Chapter III has been revised as suggested. The noted references have been included in Section III.C.3.
		65.26	The EIS has been corrected.
		65.27	Figure III.A.1.a-1 has been redrafted.
		65.28	Figure III.A.1.a-2 has been corrected.

65.29	Section III.A.1 has been revised as suggested.	65.47	Section IV.A.4 has been revised as suggested.
65.30	Air quality regulations are referenced in Section I.B.3. The discussion of the regulations themselves is available in POCS Technical Paper No. 81-7.	65.48	Comment noted.
65.31	Information on offshore noise levels is included in Section IV.A.4. In addition, Sale No. 53 EIS contains a lengthy discussion of offshore noise.	65.49	The reference has been included in the FEIS.
65.32	Section III.B.3 of the EIS was revised to include the pelagic zone.	65.50	The EIS has been clarified. As indicated in Section IV.A.1, there is a 39% probability of one or more spills greater than 10,000 bbls., but 0.5 spills greater than 10,000 bbls. are expected.
65.33	Staff thought it wise to present the gamut of possibilities.	65.51	F 70 m should read <70m. The EIS has been corrected.
65.34	The requested data is not available.	65.52	The EIS has been clarified.
65.35	Section III.D.1 has been revised as suggested.	65.53	A discussion of the sea otter is found in Sections III.B.5 and IV.C.7.
65.36	Note of J. Strickley's sighting of the Pacific Right Whale has been included in Section III.D.2.	65.54	Comment noted.
65.37	Note of occasional sighting of sea otters south of Point Conception has been included in Section III.D.2.	65.55	Section IV.C.19 has been modified to include additional data.
65.38	Section IV.A.1 has been revised, references included. Production forecast was provided by USGS in October 1980.	65.56	Comment noted.
	The 25-year life represents 5 years of exploration and 20 years of production.	65.57	Section IV.C.23 has been corrected.
65.39	Section IV.A.1 has been revised to include reference to OCS Order No. 7.	65.58-59	References have been revised as suggested.
65.40-42	Comments noted.	65.60	Section VII.A has been corrected as suggested.
65.43	Sections IV.A.1 and IV.C.7 have been revised as suggested.	65.61	The requested table is included as Table I.B.4-1 in the DEIS and remains in the FEIS.
65.44	The potential for vessels to impact marine mammals is discussed in Section IV.C.6 of the Proposed Sale No. 68 EIS and thoroughly discussed in Sale No. 53 EIS.		
65.45	The EIS has been revised as suggested. Information on leasing history is now included in Appendix F.		
65.46	Section IV.A.2 of the EIS has been revised as appropriate.		



MANPOWER
RESERVE AFFAIRS
AND LOGISTICS

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

24 SEP 1981

Mr. Robert F. Burford
Director
Bureau of Land Management
Department of the Interior
Washington, D.C. 20240

Dear Mr. Burford:

Reference is made to the Draft Environmental Impact Statement for the proposed 1982 Outer Continental Shelf Oil and Gas Lease Sale No. 68 offshore Southern California.

Attached are the Department of Defense comments on the proposed sale.

We appreciate the opportunity to review this Statement.

Sincerely,

Douglas Farbrother
Acting Deputy Assistant Secretary of Defense
(Facilities, Environment, and Economic Adjustment)

Attachment

Department of Defense
Comments on
Proposed Oil and Gas Lease Sale No. 68

- o The proposed sale contains 24 tracts of the Pacific Missile Test Center (PMTTC) range which lie immediately offshore the NAS Point Mugu launch complex and approximately 25 miles to the seaward. The PMTC at Point Mugu conducts a wide variety of hazardous operations in this area including target drone launches and recoveries, meteorological probes, and air-to-air and surface-to-surface live missile firings. Future operations programmed for the PMTC include operational evaluations of the F-16 and F-18 aircraft, advanced cruise missile testing, and evaluations of numerous developing weapon systems. In view of the required personnel safety considerations, the installation of permanent or semi-permanent oil drilling equipment in the range area would severely impact on live missile firings. Transiting commercial shipping in the area does not present the same problem and can be accommodated. Enclosure (1) contains an updated assessment of the expected adverse impact of Lease Sale No. 68 on PMTC scheduled range operations.
- o The 224 ships of the Pacific Fleet, and particularly the 173 homeported on the West Coast, place a heavy demand on the geographically limited fleet operating areas off Southern California. These operating areas include 20 tracts proposed in Sale No. 68 in the vicinity of San Clemente Island. Operational activities in these areas include sea war exercises; surface and air gunnery; anti-submarine warfare training; anti-submarine rocket and torpedo firings; aerial bombing, strafing, rocketry and close air support training; open ocean missile exercises; ammunition and explosive sweeping; carrier air operations; submarine submerged transits; and underway replenishment training. Clearly, the Department of Defense considers these already crowded fleet operating areas are incompatible with "multiple use" by commercial oil and gas exploration activities. Further, this incompatibility can only become increasingly insupportable as the size of the fleet increases. Enclosure (2) provides a recent survey of the expected adverse impact of Lease Sale No. 68 on the San Clemente fleet operating areas and the Long Beach Combat Systems Evaluation Range.
- o Based on extensive study and analysis, it has been determined that Navy exclusive use tracts off the coast of Southern California have already been reduced to the absolute minimum consistent with maritime safety, critical training requirements in support of fleet operational readiness and weapon systems development. Any further reduction in the number of Navy exclusive use tracts in the area would result in major disruptions to training and weapon systems development, as well as constitute a safety hazard.
- e In view of the foregoing the following tracts should be deleted: 98, 100, 101-103, 104-107, 111-114, 118-121, 125-127, 133-135, 142-144, 164, 166-167, 169, 189-194, 202-221.
- o Based on prior agreement the following tracts are considered compatible for joint use but require Hold Harmless, Operational & Electromagnetic stipulations indicated in the Statement on pages 1-38 and 39: 56-59, 99, 108-110, 115-117, 122-124, 128-132, 136-141, 145-163, 165, 168, 170-188, 195-201.

EXPECTED IMPACT OF PROPOSED

OCS LEASE SALE NO. 68

ON

PACIFIC MISSILE TEST CENTER

I. INTRODUCTION

a. The Pacific Missile Test Center (PACMISTESTCEN) is one of five "National Ranges". Employing approximately 5,000 people, it makes a substantial economic input to Ventura County and secondly to Los Angeles and Santa Barbara Counties. Selection of Point Mugu as the site for PACMISTESTCEN was the result of a competition involving many proposed locations. Point Mugu was chosen for its unique natural geographic advantages, providing ready access to an extensive over water test area which could be accurately instrumented within close steaming or flight distances for fleet surface or air units and for the other logistical benefits of being close to the major aircraft and electronics industry centers at Los Angeles.

b. The ultimate value of PACMISTESTCEN as a "National Range" lies in its ability to accumulate raw data from operational tests conducted under rigidly controlled conditions, then to refine and package these data so that detailed and facile analyses of complex weapons systems, either developmental or operational, may be realized. Essential to this realization and mission accomplishment, is the historically available preemptive access to those instrumented areas which comprise the missile test range. The most critical of these, identified as Warning Area 289 (W-289), has been subdivided to aid the scheduling process. These areas together with the proposed lease tracts affecting PACMISTESTCEN are shown on the range chart provided as attachment 1.

c. The range areas directly affected by Lease Sale No. 68 include all of subarea W-2 and a portion of subarea W-3B, both within W-289 and 54 square miles within area W-290. It is noted that no objection is interposed to the sale of leases within the range areas which were part of the 1974 agreement between the Departments of Interior and Defense (tracts 108, 109, 110, 115, 116, 117 and all those shown as unnumbered tracts south of Santa Rosa Island).

d. The tracts proposed for lease in OCS Sale No. 68 which threaten adverse impact to the operational capability at PACMISTESTCEN are identified as follows:

Tract No.	Tract Location	Tract No.	Tract Location
101	(43N-58W)	125	(41N-60W)
102	(45N-57W)	126	(41N-59W)
103	(45N-56W)	127	(41N-58W)

Enclosure (1)

Tract No.	Tract Location	Tract No.	Tract Location
104	(44N-55W)	128	(40N-55W)
105	(44N-56W)	134	(40N-56W)
106	(44N-57W)	135	(40N-57W)
107	(44N-56W)	142	(39N-58W)
111	(43N-55W)	143	(39N-57W)
112	(43N-56W)	144	(39N-56W)
113	(43N-57W)	189	(25N-53W)
114	(43N-56W)	190	(25N-53W)
118	(42N-55W)	191	(24N-54W)
119	(42N-56W)	192	(24N-53W)
120	(42N-57W)	193	(29N-57W)
121	(42N-56W)	194	(22N-54W)

and those portions of tracts No. 98 and No. 100 which lie inside the PACMISTESTCEN range boundary south of a line between 34°-05'-30"N latitude, 113°-13'-00"W longitude and 34°-00'-00"N latitude, 119°-39'-50"W longitude. A list of those programs and operations which are expected to be adversely impacted by the Sale No. 68 tracts, together with brief threat assessment comments, is provided as attachment 2. It is noted that the occurrence rate for the operations listed is expected to remain relatively constant for the foreseeable future.

2. OPERATIONAL ISSUES AND PROBLEMS

a. The safety of lives and property requires all ordnance launch operations at PACMISTESTCEN to be rigidly contained within defined limit lines. The dimensions of these lines are dependent upon the hazard properties of the specific ordnance item or target involved. The surface area within the limit lines and the volume of airspace above, must be confirmed free of nonparticipants, throughout the launch window. A single oil drilling structure, therefore, in any inexpedient location, could so severely limit operational capability as to threaten mission accomplishment.

b. The leasing of tracts, proposed for OCS Sale No. 68 abrogates a long standing (from May 1974) agreement between the Departments of Interior and Defense. The tract areas, determined by Department of Defense to be suitable for oil lease offerings, as part of that agreement, were the result of an extensive study. They are, in both number and location, considered to be the maximum allowable in the interest of retaining vital operational capability at PACMISTESTCEN.

c. It is essential to dispel the contention expressed on page 1-40 of the draft Environmental Impact Statement (DEIS), Volume I, OCS Lease Sale No. 68 that the historic lease sale stipulations will adequately mitigate any potential Department of Defense conflicts in the Southern California bight.

The listed stipulations for Sale No. 68 were integral with the PACMISTESTCEN studies of 1973 and 1974, which led to the Department of Defense conclusion that only a limited number of tracts could be acceptable for "joint use" in assurance of meeting mission commitments. This limited number are those included in the May 1974 agreement.

ANTICIPATED OIL SALE #68 IMPACT CHART
BASED ON OPERATIONS FOR CY ENDING 31 MARCH 1981

Type Co	No. of Ops Sched	Adverse of Impact Expected from Tracts Listed	Adverse Impact Comments	Type Co	No. of Ops Sched	Adverse of Impact Expected from Tracts Listed	Adverse Impact Comments
Surface Launch Tomahawk	None to date	Tracts: 101, 102, 103, 106, 107	Listed tracts are either complete or partially within launch hazard area. Oil installations within launch hazard area will preclude Tomahawk launches from Pt. Hugo. See para 2.d.	At/Surface Gunnery	6	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
EDA EASP Mat. Rocket	125	Tracts: 102, 103, 105, 106, 107, 111, 112, 113, 114, 118, 119, 120, 121, 125, 126, 127, 133, 134, 135, 142, 143	Listed tracts may lie completely or partially within launch hazard area. One oil installation in area PQ-10/12 Bomb Drop of the tracts would preclude EDA EASP launch.	ARPOON	2	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
EDA Robin Mat. Rocket	74	Tracts: 102, 103, 105, 106, 107, 111, 112, 113, 118, 119, 120, 125	Same as above for EDA EASP.	QM Missile Target	243	Tracts: 101, 102, 106, 107	All listed tracts within bomb drop hazard area.
FLEXAR	7	Tracts: 102, 103, 105, 106, 107, 111, 112, 113, 114, 118, 119, 120, 121, 126, 127	Oil installations in any of the listed tracts will preclude FLEXAR, radar calibration, rocket launches.	QM Missile Target	217	Same tracts as above	All tracts lie outside the launch hazard area. The approximate S/W 1/2 of tract 125 lies within the recovery hazard area. All tracts are subject to routine overflight by unmanned drone aircraft.
Air/Air Mixed Load (AIM-7/AIM-9)	128	Tracts: 125, 126, 133, 134, 142, 143, and S/W portion of 127, 135 and S/W portion of 144	Oil installations on any of the listed tracts will require restructuring of range subarea W-3B, eliminating the listed tract areas from the sea test area (ACM)	Air Combat Maneuvering (ACM)	822	Tracts: 189, 190, 191, 192, 193, 194	All listed tracts subject to over- flight by multiple aircraft engaged in air combat maneuvering. See para 2.e.
Air/Air (AIM-7)	21	Same as shown for AIM-7/AIM-9 above	Same as for AIM-7/AIM-9 above.	Aircraft Carrier Quali- fication Flight Operations	100	Same tracts as above	Oil installations on any listed tract would present serious navigation hazard for aircraft carriers on night exercises. See para 2.e.
Air/Air (AIM-9)	75	Same as shown for AIM-7 above	Same as for AIM-7/AIM-9 on page 1				
SHRIKE	18	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1				
SEASPARROW	44	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1				
Fleet Bomb Drop	47	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1				

There are programs at PACMISTESTCEN, which during periods when their operational activity is limited might be reconcilable with "joint use". These, however, are considered exceptions. The nature of tactical weapons and jet powered drone targets routinely fired at PACMISTESTCEN, the extent of their hazard areas and the frequency at which their operations occur, determine PACMISTESTCEN sea range areas to be essentially incompatible with the "joint use" concept.

d. The new Tomahawk missile, surface launch facility, at PACMISTESTCEN will become fully operational by April 1982. This installation is intended to serve as a facility for Tomahawk, system integration, system training, naval tactical evaluation, and for selected Tomahawk missile launches. Following the test and evaluation phase of the Tomahawk program, this site is slated to become an "In Service Engineering Test Facility". It will be the only permanent test site from which the Tomahawk missile can be launched. Oil installations in the following approximate areas as shown on attachment 2, would preclude Tomahawk launches from this test facility: eastern 1/3 of tract 101; tract 102; tract 103; north eastern 1/2 of tract 106 and tract 107.

e. Air combat maneuvering (ACM) operations, as indicated on attachment 2, are routinely conducted (over 800 yearly) in W-290 directly over proposed lease tracts 189, 190, 191, 192, 193 and 194. Though no ordnance is expended, these operations involve numerous high performance fighter aircraft engaged in competitions requiring a variety of aerobatic attitudes and high speed flight. An extensive study has determined that there is no other location in the Southern California area where ACM training for El Toro based, marine squadrons can be provided. Additionally, any oil installation on the six tracts 189-194 would present a serious navigation hazard for aircraft carriers conducting qualification and other night flight operations. There were in excess of 100 such operations during the calendar year which ended March 1981.

3. CONCLUSIONS

a. The primary factor which justifies withdrawal of the addressed tracts from OCS Lease Sale No. 68 or future lease sales, is considered to be the need for retention of the historic preemptive access to all missile range test areas. Since operational capability and therefore mission accomplishment, are uniquely dependent upon such access, any oil installation in the lease sale tracts, would have a seriously debilitating effect on the PACMISTESTCEN mission.

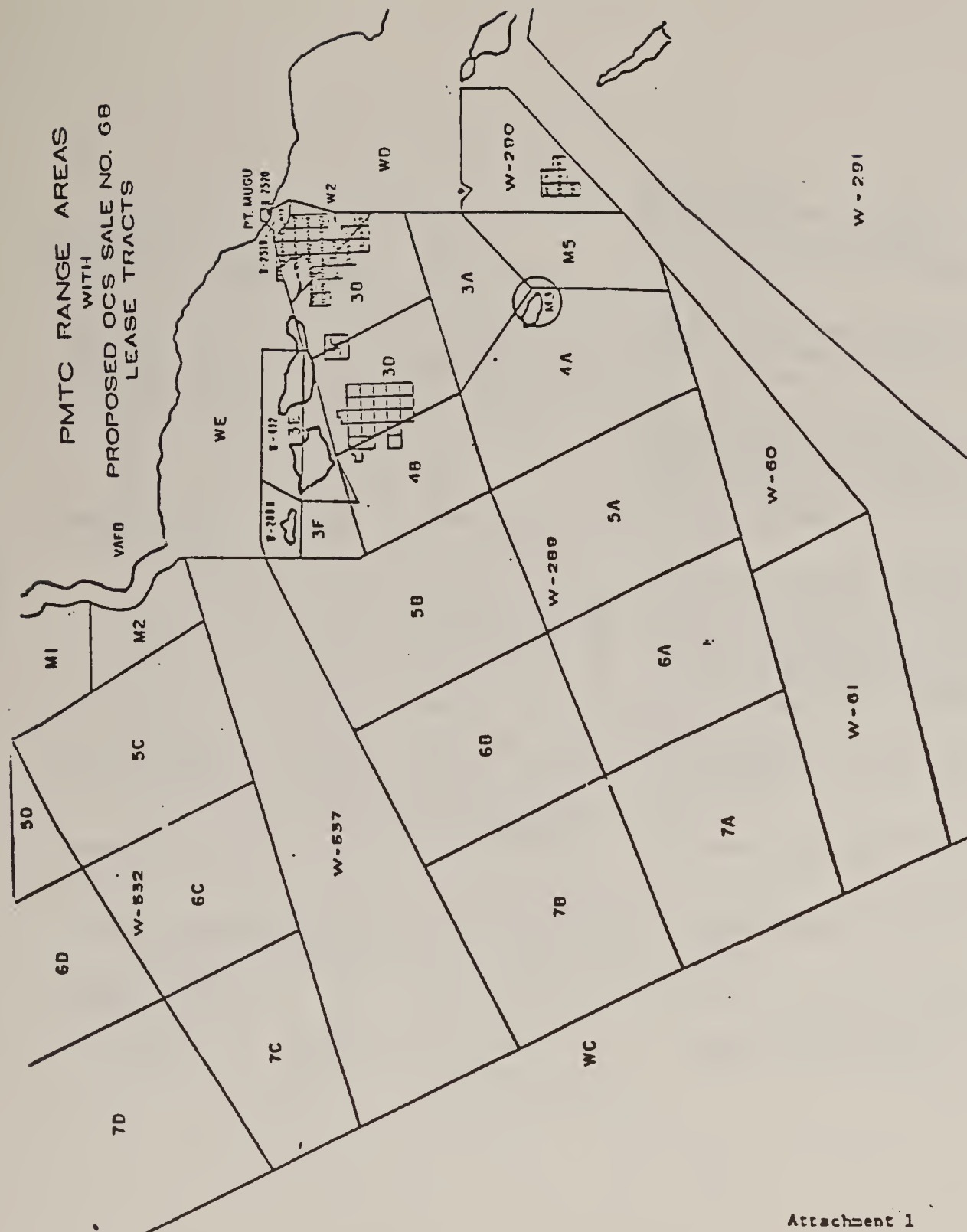
b. Oil industry drill ships or platforms, in the lease tracts addressed, are determined to be incompatible with tactical missile launches, especially those employing heat seeking devices or target of opportunity seekers; they are additionally, considered essentially incompatible with drone target flights, air combat flight exercises and carrier qualification exercises.

c. The addressed OCS Sale No. 68 leases within W-289 extend in a solid block, .5 NM seaward from the three mile limit. They seal off the missile and target launch sites at Point Mugu from the sea range test areas beyond. Oil installations, in these tracts, therefore, could preclude PACMISTESTCEN ability to complete any program objectives which require missile or target launches from Point Mugu.

d. The addressed OCS Sale No. 68 leases within W-290 due to their basic incompatibility with scheduled operations and by denying preemptive access to that portion of the range, immediately threaten PACMISTESTCEN ability to provide for essential marine air combat training and aircraft carrier flight qualification exercises. It additionally excludes consideration of W-290 for any future missile launch activities.

e. Notwithstanding the trend toward weapons with greater stand-off potentials, which increase the requirement for instrumented test ranges of greater size and complexity, the need for test range areas close to Point Mugu, with their inherent logistical advantages, longer on station times and greater instrumentation accuracies is a continuing basic requirement.

4. RECOMMENDATION. That the agreement of May 1974 between Department of Interior and Department of Defense, which limited OCS leases in certain, mission essential, military operating areas, be reconfirmed as binding on all future OCS oil tract sales.



Attachment 1

ANTICIPATED OIL SALE #68 IMPACT CHART
BASED ON OPERATIONS FOR CY ENDING 31 MARCH 1991

Type Of	No. of Ops Sched	Adverse of Impact Expected from Tracts Listed	Adverse Impact Comments
Surface Launch Tomahawk	None to date	Tracts: 101, 102, 103, 106, 107	Listed tracts are either complete or partially within launch hazard area. Oil installations within launch hazard area will preclude Tomahawk launches from Pt. Mugu. See para 2.d.
EDA EASP Met. Rocket	135	Tracts: 102, 103, 105, 106, 107, 111, 112, 113, 114, 118, 119, 120, 121, 125, 126, 127, 133, 134, 135, 142, 143	Listed tracts may lie completely or partially within launch hazard area. One oil installation in any of the tracts would preclude EDA EASP launch.
EDA Robin Met. Rocket	74	Tracts: 102, 103, 105, 106, 107, 111, 112, 113, 118, 119, 120, 125	Same as above for EDA EASP.
FLEXAR	7	Tracts: 102, 103, 105, 106, 107, 111, 112, 113, 114, 118, 119, 120, 121, 126, 127	Oil installations in any of the listed tracts will preclude FLEXAR, radar calibration, rocket launches.
Air/Air Mixed Load (AIM-7/AIM-9)	128	Tracts: 125, 126, 133, 134, 142, 143, and S/W portion of 127, 135 and S/W portion of 144	Oil installations on any of the listed tracts will require restructuring of range subarea W-3E, eliminating the listed tract areas from the sea test range.
Air/Air (AIM-7)	21	Same as shown for AIM-7/AIM-9 above	Same as for AIM-7/AIM-9 above.
Air/Air (AIM-9)	75	Same as shown for AIM-7 above	Same as for AIM-7/AIM-9 on page 1.
SHRIKE	18	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
SEASPARROW	44	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
Fleet Bomb Drop	47	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.

Attachment 2

Type Co	No. of Ops Sched	Adverse of Impact Expected from Tracts Listed	Adverse Impact Comments
1st/Surface Gunnery	6	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
Surface/Surface Gunnery	52	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
ARPOON	2	Tracts: 125, 126, 127, 133, 134, 135, 142, 143, 144	Same as for AIM-7/AIM-9 on page 1.
PQ-10/12 Bomb Drop	5	Tracts: 101, 102, 106, 107	All listed tracts within bomb drop hazard area.
QM Missile Target	243	Tracts: 100, 101, 102, 103, 104, 105, 106, 107, 111, 112, 113, 114, 118, 119, 120, 121, 125, 126, 127, 133, 134, 135, 142, 143, 144	All tracts lie outside the launch hazard area; the approximate S/W 3/4 of tract 125, S/W 1/4 of tract 126, and west 1/5 of tract 133 lie within the recovery hazard area. All tracts are subject to routine overflight by unmanned drone air- craft.
QM Missile Target	217	Same tracts as above	All tracts lie outside the launch hazard area. The approximate S/W 1/2 of tract 125 lies within the recovery hazard area. All tracts are subject to routine overflight by unmanned drone aircraft.
Air Combat Maneuvering (ACM)	822	Tracts: 189, 190, 191, 192, 193, 194	All listed tracts subject to over- flight by multiple aircraft engaged in air combat maneuvering. See para 2.e.
Aircraft Carrier Quali- fication Flight Operations	100	Same tracts as above	Oil installations on any listed tract would present serious navigation hazard for aircraft carriers on night exercises. See para 2.e.

EXPECTED IMPACT OF PROPOSED

OCS LEASE SALE NO. 68

ON

SAN CLEMENTE OPERATION AREAS

AND

LONG BEACH COMBAT EVALUATION RANGE

1. SAN CLEMENTE OPAREAS

a. Tracts 189-194, 204, 207, and 210-221 lie in the middle of the area used for the vast majority of carrier (CV) flight operations in Southern California. The presence of a single exploratory drilling rig would require a CV conducting flight operations to alter course frequently. Should several drilling rigs be constructed, flight operations could become virtually impossible. Between 1 July 1980 and 30 June 1981, CVs averaged 84 operating days per quarter, with a maximum of 93 days in one quarter. This tempo is projected to increase.

b. An average of 16 Navy ships have used the San Clemente OpArea (area within a 25 nautical mile radius of island) on each weekday during the past year. Operations in the San Clemente OpArea which would be hazardous to oil exploration vessels and oil rigs include TOMAHAWK missile firings, ASW training, ASROC and torpedo firing, bombing, strafing, rockets and close air support training; naval gunfire support firing; long range close-in firing; and underwater demolition training.

c. Tracts 202 through 210 lie across Submarine Transit Lane SIERRA ZEUS. The presence of oil rigs in the heavily travelled transit lane would present a significant hazard to submerged navigation. Lane SIERRA ZEUS is also the designated underway refueling lane. Due to environmental restrictions, fuel cannot be pumped inside of 50 nautical miles to the coast. The distance from the 50 mile line to the easternmost tracts, 207 and 210, is approximately 30 miles, and would result in inadequate sea room for underway refueling lasting longer than 2 1/2 hours. In view of potential conflicts, it is recommended that tracts 202-203, 205-206, and 208-209, presently designated for joint use, be redesignated for Navy exclusive use.

Enclosure (2)

2. LONG BEACH COMBAT SYSTEMS EVALUATION RANGE (CSER)

a. The requirements and operations of the Long Beach Combat Systems Evaluation Range (CSER), also called Ship-board Electronics Systems Facility (SESEF) have expanded substantially, particularly in support of the operating fleet.

b. The re-establishment of Long Beach Naval Base will increase current fleet assets at the Naval Base by more than thirty ships. This dramatically increases the operational necessity of the present location of CSER to support dockside and at-sea evaluations/tests of home ported ships. In addition, the present location is considered paramount to support ships operating in the Long Beach operating area, ships transiting to and from Naval Weapons Station, Seal Beach and ships undergoing shipyard availabilities. The operating area was used in FY 80 on 232 days by 41 ships during which 4,172 electronic system tests were accomplished. This is a 17 percent increase in operating area usage and a 100 percent increase in number of ships over FY 79. Based on usage data for the first two quarters of FY 81, similar increases in CSER demands are projected. For these reasons, in part, CSER/SESEF has undergone several upgradings, and NAVSHIPYD Long Beach recently submitted MIL-CON P-183 to replace the existing facilities with a larger structure to meet its modernization plans and expanding commitments.

c. With the installation of the two oil rigs "Ellen" and "Elly", operations around the special purpose buoy, although manageable, are currently of high concern when the North bound traffic is heavy and visibility limited. Any new traffic between the special purpose buoy and the shore facility generated as a result of additional structures will present a safety hazard in addition to reducing effectiveness of the range to an unacceptable level.

d. For these reasons, it is requested that tracts 164, 166, 167 and 169 be deleted from sale considerations. Additional structures in these areas would prevent manageable coexistence and render the range unusable.

Response to U.S. DEPARTMENT OF DEFENSE

66.

USDI is currently consulting with DOD at the national level concerning DOD's comments on the proposed sale. Prior to the proposed lease sale, this consultation will determine what appropriate mitigation measures, if any, need to be applied to tracts in military operating areas.

CHAPTER VIII

VIII. APPENDICES

A. Approvals, Certifications, and Permits

Federal, State, and local authorizations included in the permitting process for oil and gas exploration and development activities are given below. (Also see Section I.B.3, Regulatory Framework.)

1. Federal Agencies

a. Department of the Army (Section 10 of the River and Harbor Act of 1899): The Corps of Engineers issues construction permits to conduct exploratory drilling of oil and gas wells and to construct platforms, production facilities, and pipelines. The Corps of Engineers has the responsibility to consider all matters affecting navigation and national security.

b. Department of the Interior, Bureau of Land Management (43 CFR 3340): The Bureau of Land Management (BLM) grants right-of-way permits on the Outer Continental Shelf (OCS) for BLM pipelines which are not wholly contained within boundaries of a single lease, the boundaries of unitized leases, or the boundaries of contiguous (not cornering) leases of the same owner or operator.

c. Department of the Interior, Geological Survey: The Geological Survey (USGS) approves 1) Exploratory Plans and accompanying Environmental Reports, 2) Development and Production Plans and accompanying Environmental Reports, 3) application of permit to drill, deepen, or plug back wells, and 4) right of use and easement on the OCS to construct and maintain platforms, artificial islands, GS pipelines (other than BLM pipelines) and other devices which are permanently or temporarily attached to the seabed (30 CFR 250).

USGS issues permits for construction and operation of all oil and gas equipment on the OCS that could emit air pollutants. They also determine exemptions for certain equipment and facilities, and enforce limitations on existing, new, or modified sources (Clean Air Act Amendments of 1977 and OCS Lands Act Amendments of 1978).

d. Department of Transportation (33 CFR 67): The Coast Guard approves applications for Private Aid to Navigation. The Coast Guard promulgates and enforces regulations on lights and other warning devices, safety equipment and other matters relating to safety of life and property.

e. Environmental Protection Agency (Federal Water Pollution Control Act - 33 U.S.C. 1251. seq.; and 40 CFR 125): The Environmental Protection Agency (EPA) issues the National Pollution Discharge Elimination System Permits for oil and gas operations prior to well drilling. EPA is responsible for the discharge of pollutants from point sources, into navigable water, the contiguous zone, and the ocean.

f. Federal Communications Commission (Federal Communication Act of 1934, U.S. Title Code 47): The Federal Communication Commission issues the license for radio communication equipment.

g. Federal Energy Regulatory Commission (FERC) (Natural Gas Policy Act of 1978, 92 Stat. 3350): FERC issues certificate of public convenience and necessity for construction and operation of natural gas facilities.

2. State of California

a. Office of Planning and Research is responsible for coordinating all agencies issuing any type of permit for a specific development activity. State, County, City and Special District permits are coordinated and issued simultaneously within a specific time.

b. California Coastal Commission issues a certification of Consistency with the approved State of California Coastal Zone Management program (Section 306 of the Coastal Zone Management Act of 1972 [16 U.S.C. 1455]). This is for any project or permit which may directly affect the coastal zone.

California Coastal Commission also issues permits for pipeline construction from the 3-mile limit offshore to coastal zone jurisdiction inland until the affected local jurisdiction has an approved Local Coastal Plan (California Coastal Act of 1972).

c. California Public Utilities Commission issues encroachment permits for pipeline crossings of railroads and utility rights-of-way.

d. Division of Industrial Safety issues permits for trenches concerning onshore pipeline construction.

e. Department of Parks and Recreation issues encroachment permits for pipeline construction across State-owned beaches.

f. Department of Transportation Division of Highways issues permits for road turnout construction on highways and pipeline crossings of highways.

g. Solid Waste Management Board issues permits for disposal of soil and hazardous waste material.

h. State Land Commission issues rights-of-way leases across State Lands for construction of pipelines (Division 6 of the Public Resources Code and Title 2, Division 3, of the California Administrative Code).

i. State Water Resources Control Board issues permits for wastewater discharge and surface drainage.

3. Local Governments

a. Air Pollution Control District issues permits to construct and operate oil and gas treatment facilities within the county jurisdiction and out to the 3-mile limit.

b. County Department of Transportation issues permits for road excavation and encroachment permits for pipeline construction.

c. Approvals from other County Departments.

d. Approvals, certifications, and permits for the City authorities.

e. For jurisdictions within the coastal zone, permits are approved according to an approved Local Coastal Plan.

B. Glossary

Acute	- short term, severe or intense impacts may be felt, bioassays of generally 96 hours or less.
Anadromous fish	- fish that migrate up rivers from the sea to breed in fresh water.
Anomaly	- deviation from normal condition.
Anthropogenic	- coming from human sources.
Benthic	- bottom dwelling.
Benthic macroinvertebrate	- animals such as worms, clams, or crabs which are large enough to see without the aid of a microscope.
Biomass	- weight of living organisms.
Carrying capacity	- the maximum number or weight of individuals that can exist in a given habitat.
Cetacean	- any of an order (Cetacea) of aquatic mostly marine mammals including the whales, dolphins, porpoise and related forms with large head, fishlike nearly hairless body, and paddle-shaped forelimbs.
Critical habitat	- an area that is essential to the conservation of a species.
Demersal	- bottom dwelling.
Endangered	- refers to any species which is in danger of extinction throughout all or a significant portion of its range and has been officially listed by the appropriate Federal or State agency; a species is determined to be endangered (or threatened) because of any of the following factors: a) the present or threatened destruction, modification, or curtailment of its habitat or range; b) over-utilization for commercial, sporting, scientific, or educational purposes; c) disease or predation; d) the inadequacy of existing regulatory mechanisms; or e) other natural or man-made factors affecting its continued existence.

Epibenthic organism	- those organisms attached to, or living on a substrate as opposed to those which burrow and live in the substrate.
Epiphyte	- a plant growing attached to another plant.
Fauna	- animals, especially the animals of a particular region or time.
Fledge	- to rear until ready for flight or independent activity.
Fledgling	- a young bird just fledged.
Flyway	- an established air route of migratory birds.
Gross regional product	- total value added generated from all sectors in the regional economy including government and households. (See value added.)
Haul-out area	- specific locations where pinnipeds come ashore and concentrate in numbers to rest, breed, and/or bear young.
Hypothermia	- subnormal temperature of the body, usually due to excessive heat loss.
Indirect (socio-economic) effects	- caused by auxiliary activities to an action. Related only indirectly to the action.
Induced (socio-economic) effects	- caused by activities which are stimulated by an action but not directly related to it.
Jobs	- the number of full-time and part-time positions. It does not equal the number of persons employed, since there could be multi-job holders.
Mariculture	- the breeding or growth of marine animals and plants to increase their stocks.
Microcrustacean	- any relatively small crustacean (may range from microscopic to a few inches in size) including organisms such as shrimp, crabs, beach hoppers (amphipods) copepods and other similar groups.
Mysids	- small shrimp like organisms.

Ovoviviparous	- producing eggs that hatch within the female's body.
Phytoplankton	- plant (photosynthetic) plankton.
Pinniped	- any of a suborder (Pinnipedia) of aquatic carnivorous mammals (e.g., seals, sea lions) with all four limbs modified into flippers.
Purse seine	- a fishing net that is pursed or drawn into the shape of a bag to enclose the catch.
Rare	- refers to any species whose continued existence is threatened by one or more conditions and has been officially listed by the appropriate State agency; a species is determined to be rare because of any of the following conditions: a) the species is confined to a relatively small and specialized habitat and is incapable of adapting to different environmental conditions; (b) the species, although found in other parts of the world, is nowhere abundant; c) the species is so limited that appreciable reduction in range, numbers, or habitat would cause it to become endangered; or d) the species would become endangered if current management and protection programs were diminished to any degree.
Rookery	- the nesting or breeding grounds of gregarious (i.e., social) birds or mammals; also a colony of such birds or mammals.
Subtidal	- generally considered to be that part of the ocean bottom not uncovered by tidal action.
Threatened	- refers to any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and has been officially listed by the appropriate Federal agency; criteria for determination of threatened status can be found under "endangered".
Trawl	- a large, tapered fishing net of flattened, conical shape that is typically towed along the sea bottom.

Trophic	- feeding, trophic levels refer to the hierarchy of organisms from photosynthetic plants to carnivores such as man.
Upwelling	- movement of subsurface water to the surface of the ocean, caused by meteorological and physical phenomena.
Value added	- for a given enterprise, the market price of goods completed, less the cost of purchased materials. Gross value added includes compensation to employees, profits, taxes, rents, interest, and reserves for depreciation.
Xenobiotic	- compound not usually associated with living organisms.
Zooplankton	- animal plankton, dependent on phytoplankton for food source.

C. Abbreviations

AAPG	American Association of Petroleum Geologists
ANS	Alaska North Slope
API	American Petroleum Institute
ASBS	Areas of Special Biological Significance
BAST	Best Available and Safest Technologies
BCDC	Bay Conservation and Development Commission
BLM	Bureau of Land Management
BOD	Biological Oxygen Demand
BP	Before Present
CalCOFI	California Cooperative Oceanic Fisheries Investigations
CARB	California Air Resources Board
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CDOG	California Division of Oil and Gas
CEIP	Coastal Energy Impact Program
CEP	Council of Environmental Protection
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMP	Coastal Management Program
COD	Chemical Oxygen Demand
CSLC	California State Lands Commission
CZMA	Coastal Zone Management Act
DCMOFO	Deputy Conservation Manager, Offshore Field Operation
DEIS	Draft Environmental Impact Statement
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
EA	Environmental Assessment
EIS	Environmental Impact Statement
EOR	Enhanced Oil Recovery
EPA	U.S. Environmental Protection Agency
ERG	Environmental Resources Group
FACSFAC	Fleet Area Control and Surveillance Facility
FWPCA	Federal Water Pollution Control Act
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulation Commission
FIRS	Failure and Inventory Reporting System
FONSI	Finding of No Significant Impact
FWPCA	Federal Water Pollution Control Act
FWS	U.S. Fish and Wildlife Service
GS (also USGS)	U.S. Geological Survey
IMCO	Intergovernmental Maritime Consultative Organization
IPP	Intergovernmental Planning Program
LA	Los Angeles
LB	Long Beach
LCP	Local Coastal Plan
LNG	Liquified Natural Gas
LUP	Land Use Plan
MIT	Massachusetts Institute of Technology

MTB	Materials Transportation Bureau
MWD	Metropolitan Water District
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGPA	National Gas Policy Act
NMFS	National Marine Fisheries Service
NMRC	National Maritime Research Center
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant and Discharge Elimination System
NPS	National Park Service
NR	Not reported
NRC	Nuclear Regulatory Commission
NTL's	Notices to Lessees and Operators
OCS	Outer Continental Shelf
OS&T	Offshore Storage and Treatment
PA	Precautionary Area
PAR	Port Access Route
PG&E	Pacific Gas & Electric Company
PGT	Pacific Gas Transmission Company
PMTC	Pacific Missile Test Center
POCS	Pacific Outer Continental Shelf
PSD	Prevention of Significant Deterioration
RTWGs	Regional Technical Working Groups
SALM	Single Anchor Leg Mooring System
SB	State Beach
SBAPCD	Santa Barbara Air Pollution Control District
SCAQMD	South Coast Air Quality Management District
SCB	Southern California Bight
SCE	Southern California Edison
SDAPCD	San Diego Air Pollution Control District
SID	Secretarial Issue Document
SMB	Single Mooring Buoy
SP	State Park
SSF	Shipping Safety Fairway
TSS	Traffic Separation Scheme
UC	University of California, Irvine
USC	University of Southern California
USCG	U.S. Coast Guard
USDI	U.S. Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS (also GS)	U.S. Geological Survey
VOC	Volatile Organic Compounds
VTSS	Vessel Traffic Separation Scheme
WOGA	Western Oil and Gas Association
WSMC	Western Space and Missile Center

D. Units of Measure

B/D	= barrels per calendar day
bcd	= barrels per calendar day
Btu	= British thermal unit
bbl	= barrel
BP	= years before present
bcf	= billion cubic feet

cm	=	centimeter
dBA	=	decibels audible
dwt	=	dead weight ton
ha	=	hectares
hr	=	hour
km	=	kilometer
l	=	liter
lb.	=	pound
m	=	meter
maxi.	=	maximum
mg	=	milligrams
mgd	=	million gallons per day
MW	=	megawatt
MWe	=	megawatts (electric)
ng	=	nannogram
nm	=	nautical mile
ppb	=	parts per billion
pphm	=	parts per hundred million
ppm	=	parts per million
PPT	=	parts per thousand
sp.	=	species
μg	=	microgram
0/00	=	parts per thousand

E. TRACT SELECTION LIST PROPOSED OCS SALE No. 68
SOUTHERN CALIFORNIA

LEASE MAP NO. 6A

<u>BLOCK NO.</u>	<u>TRACT NO.</u>	<u>ACRES</u>
55N 89W	1	5,760
55N 88W	2	5,760
55N 87W	3	1,801
55N 86W	4	5,760
54N 89W	5	5,760
54N 88W	6	5,760
54N 87W	7	5,760
54N 86W	8	5,760
54N 82W	9	3,700
54N 76W	10	160
53N 87W	11	5,760
53N 86W	12	5,760
53N 72W	13	3,700
52N 86W	14	5,760
52N 85W	15	5,760
52N 84W	16	5,760
52N 82W	17	5,760
52W 73N	18	5,760
52N 72W	19	5,760
51N 87W	20	5,760
51N 86W	21	5,760
51N 85W	22	5,760
51N 80W	23	5,760
51N 79W	24	5,760
51N 77W	25	5,760
51N 76W	26	5,760
51N 75W	27	5,760
51N 74W	28	5,760
51N 73W	29	5,760
51N 72W	30	5,760
50N 86W	31	5,760
50N 85W	32	5,760
50N 84W	33	5,760
50N 82W	34	5,760
50N 81W	35	5,760
50N 78W	36	5,760
50N 77W	37	5,760
50N 75W	38	5,760
50N 74W	39	5,760
49N 85W	40	5,760
49N 84W	41	5,760
49N 83W	42	5,760
49N 82W	43	5,760

TRACT SELECTION LIST PROPOSED OCS SALE No. 68
SOUTHERN CALIFORNIA (Continued)

LEASE MAP NO. 6A

<u>BLOCK NO.</u>	<u>TRACT NO.</u>	<u>ACRES</u>
49N 81W	44	5,760
49N 80W	45	5,760
49N 79W	46	5,760
49N 74W	47	5,760
48N 85W	48	5,760
48N 84W	49	5,760
48N 83W	50	5,600
48N 82W	51	4,100
48N 73W	52	5,760
48N 72W	53	5,760
47N 84W	54	5,760
47N 83W	55	2,900
40N 74W (SE $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$)	56	3,240
40N 73W (NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$)	57	5,400
40N 72W	58	5,760
37N 73W	59	5,760
		318,601

LEASE MAP NO. 6B

53N 71W	60	1,200
52N 71W	61	5,600
52N 70W	62	4,000
51N 70W (E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$)	63	4,320
51N 69W	64	5,760
51N 68W (S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$)	65	4,320
51N 67W (S $\frac{1}{2}$)	66	2,880
51N 66W (S $\frac{1}{2}$)	67	2,880
51N 62W	68 ₁	1,800
50N 68W	70	5,760
50N 67W	71	5,760
50N 66W	72	5,760
50N 62W (N $\frac{1}{2}$ NE $\frac{1}{4}$)	73	720
50N 61W	74	2,800
50N 60W	75 ₁	121
	1	
49N 67W	78	5,760
49N 66W	79	5,760
49N 65W	80	5,760
49N 64W	81	5,760
49N 63W	82 ²	5,760

¹The 1968 leases on tracts 69, 76, and 77 have been extended through 8-12-82. These tracts are not being considered for Sale No. 68.

²There is a Bill before Congress to reinstate the 1968 leases on tracts 82 and 95. If this Bill becomes law, these tracts would not be included in Sale No. 68.

TRACT SELECTION LIST PROPOSED OCS SALE No. 68
SOUTHERN CALIFORNIA (Continued)

LEASE MAP NO. 6B

<u>BLOCK NO.</u>	<u>TRACT NO.</u>	<u>ACRES</u>
49N 62W	83	5,760
49N 61W	84	5,760
49N 60W	85	4,056
49N 59W	86	408
48N 71W	87	5,760
48N 70W	88	5,760
48N 69W	89	5,760
48N 68W	90	5,760
48N 67W	91	5,760
48N 66W	92	5,760
48N 65W	93	5,760
48N 64W	94	5,760
48N 63W	95 ²	5,760
47N 59W	96	5,060
47N 58W	97	9
46N 57W	98	600
45N 60W	99	2,726
45N 59W	100	4,804
45N 58W	101	5,760
45N 57W	102	4,700
45N 56W	103	900
44N 59W	104	1,400
44N 58W	105	5,760
44N 57W	106	5,760
44N 56W	107	5,600
43N 62W	108	1,800
43N 61W	109	1
43N 60W	110	600
43N 59W	111	4,300
43N 58W	112	5,760
43N 57W	113	5,760
43N 56W	114	5,760
42N 62W	115	5,760
42N 61W	116	5,700
42N 60W	117	5,760
42N 59W	118	5,760
42N 58W	119	5,760
42N 57W	120	5,760

²There is a Bill before Congress to reinstate the 1968 leases on tracts 82 and 95. If this Bill becomes law, these tracts would not be included in Sale No. 68.

TRACT SELECTION LIST PROPOSED OCS SALE NO. 68
SOUTHERN CALIFORNIA (Continued)

LEASE MAP NO. 6B

<u>BLOCK NO.</u>	<u>TRACT NO.</u>	<u>ACRES</u>
42N 56W	121	5,760
42N 54W	122	5,760
42N 53W	123	5,760
41N 71W ($S\frac{1}{2}NE\frac{1}{4}, S\frac{1}{2}$)	124	3,600
41N 60W	125	5,760
41N 59W	126	5,760
41N 58W	127	5,760
41N 51W	128	5,760
41N 50W	129	5,760
40N 71W	130	5,760
40N 70W	131	5,760
40N 69W	132	5,760
40N 59W	133	5,760
40N 58W	134	5,760
40N 57W	135	5,760
40N 51W	136	5,760
40N 50W	137	5,760
40N 49W	138	5,760
39N 71W	139	5,760
39N 70W	140	5,760
39N 69W	141	5,760
39N 58W	142	5,760
39N 57W	143	5,760
39N 56W	144	5,760
39N 50W	145	5,760
39N 49W	146	5,760
39N 47W	147	5,760
38N 71W	148	5,760
38N 70W	149	5,760
38N 69W	150 ³	5,760
38N 47W	151	5,760
38N 46W	152	5,760
37N 71W	153	5,760
37N 70W	154	5,760
37N 69W	155 ³	5,760
36N 71W	156	5,760
36N 70W	157	5,760
36N 69W	158	5,760
34N 41W	159	5,760
34N 40W	160	5,760
33N 41W	161	5,760
33N 40W	162	5,760
32N 40W	163	5,760
		497,385

³The Sale No. 35 leases on tracts 150 and 155 have been extended through 7-13-82. These tracts are included in the EIS but probably will not be included in Sale No. 68.

TRACT SELECTION LIST PROPOSED OCS SALE No. 68
SOUTHERN CALIFORNIA (Continued)

LEASE MAP NO. 6C

<u>BLOCK NO.</u>	<u>TRACT NO.</u>	<u>ACRES</u>
36N 36W	164	1
35N 38W	165	5,100
35N 37W (NE $\frac{1}{4}$ NE $\frac{1}{4}$)	166	360
35N 36W	167	4,100
34N 39W	168	5,760
34N 36W	169	5,760
33N 39W	170	5,760
33N 38W	171	5,760
32N 39W	172	5,760
32N 37W	173	5,760
32N 35W	174	5,760
32N 34W	175	5,760
32N 33W	176	5,700
32N 32W	177	3,900
32N 31W	178	200
31N 39W	179	5,760
31N 38W	180	5,760
31N 37W	181	5,760
31N 34W	182	5,760
31N 33W	183	5,760
31N 32W	184	5,760
31N 31W	185	4,700
30N 37W	186	5,760
30N 32W	187	5,760
30N 31W	188	5,760
		121,981

TRACT SELECTION LIST PROPOSED OCS SALE No. 68
SOUTHERN CALIFORNIA (Continued)

LEASE MAP NO. 6D

<u>BLOCK NO.</u>	<u>TRACT NO.</u>	<u>ACRES</u>
25N 54W	189	5,760
25N 53W	190	5,760
24N 54W	191	5,760
24N 53W	192	5,760
24N 52W	193	5,760
23N 54W	194	5,760
20N 66W	195	5,760
20N 65W	196	5,760
20N 64W	197	5,760
19N 66W	198	5,760
19N 63W	199	5,760
19N 62W	200	5,760
19N 61W	201	5,760
13N 54W	202	5,760
13N 53W	203	5,760
13N 52W	204	5,760
12N 54W	205	5,760
12N 52W	206	5,760
12N 51W	207	5,760
11N 53W	208	5,760
11N 52W	209	5,760
11N 51W	210	5,760
10N 50W	211	5,760
10N 49W	212	5,760
10N 48W	213	5,760
		<u>144,000</u>

HECTARES

OCS Official Protraction
Diagram No. NI 11-10

N751 E66 (426)	214	325.60
N751 E67 (427)	215	342.99
N751 E68 (428)	216	360.34
N750 E66 (470)	217	2,304
N750 E67 (471)	218	2,304
N750 E68 (472)	219	2,304
N749 E67 (515)	220	2,304
N749 E68 (516)	221	2,304
		<u>12,548.93</u>
		<u>= 31,008</u>

TOTAL ACRES 1,112,975
(HECTARES 450,415)

F. History of Oil and Gas Leasing, Exploration and Development
Off Southern California

Exploration and development for oil and gas has a long history in Southern California, with the first offshore oil production occurring over 85 years ago. Development was under State control until 1966 when the first Federal OCS lease sale was held.

Four Federal leasing actions have occurred within the Southern California offshore area:

- 1) A 1966 drainage sale of a single lease, OCS P-0166, occurred in the Santa Barbara Channel offshore Carpinteria.
- 2) A February 1968 general oil and gas lease sale was held in the Santa Barbara Channel. The call for nominations in this area resulted in 150 tracts being nominated by industry. Fourteen companies participated. One hundred and ten tracts comprising approximately 540,069 acres were offered for lease, of which 75 tracts were bid upon. Of the 71 leases originally issued, 34 are still active.
- 3) A December 1975 general oil and gas lease sale, No. 35, was held in the area south of the Santa Barbara Channel Islands. The call for nominations resulted in approximately 6.8 million acres being nominated by 17 companies. Two hundred and thirty-one tracts offshore Ventura, Los Angeles, and Orange Counties were offered for lease. Seven leases are still active.
- 4) A June 1979 general oil and gas lease sale, No. 48, contained tracts in the general area from Point Conception in the north to the U.S.-Mexican border in the south. Seventeen companies nominated 970 tracts. Two hundred and seventeen tracts were evaluated in the environmental impact statement. Of the 148 tracts offered at the lease sale, 55 were bid upon. Fifty-four leases were issued.

The Southern California Leasing History visual shows all tracts which have been, or are currently, leased, and those tracts which were deleted during development of the proposal. Some tracts deleted from a sale have been considered for lease in a subsequent sale. Tracts being considered in Proposed Sale No. 68 that were deleted in part or totally from previous sales are listed below with the reason for the previous deletion. Additional information is provided on the Southern California Leasing History visual.

The following tracts were deleted in part or totally from Sale No. 35 during tentative tract selection to establish a 3/4-mile buffer zone adjacent to State Oil and Gas Sanctuaries due to State concern:

Proposed Sale No. 68 Tract No.	Coordinates of Area Previously Deleted	
176	32N 33W	N $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$
177	32N 32W	N $\frac{1}{2}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$
178	32N 31W	ALL
185	31N 31W	NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ NW $\frac{1}{4}$ E $\frac{1}{2}$ SE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$

The following tracts in the vicinity of the Federal-State boundary were deleted in part or totally from Sale No. 35 during final tract selection due to State concern:

Proposed Sale No. 68 Tract No.	Coordinates of Area Previously Deleted
164	36N 36W ALL
166	35N 37W NE $\frac{1}{4}$ NE $\frac{1}{4}$
167	35N 36W N $\frac{1}{2}$ NW $\frac{1}{4}$

The following tracts in the adjunct to the Santa Barbara Channel Ecological Preserve were excluded from the Call for Nominations for Sale No. 48:

Proposed Sale No. 68 Tract No.	Coordinates of Area Previously Deleted
62	52N 70W E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$
63	51N 70W E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$
64	51N 69W ALL
65	51N 68W S $\frac{1}{2}$, S $\frac{1}{2}$ N $\frac{1}{2}$
66	51N 67W S $\frac{1}{2}$
67	51N 66W S $\frac{1}{2}$
71	50N 67W ALL
72	50N 66W ALL

The following tracts in areas where jurisdictional questions could be raised were excluded in part or totally from the Call for Nominations for Sale No. 48:

Proposed Sale No. 68 Tract No.	Coordinates of Area Previously Deleted
164	36N 36W ALL
166	35N 37W NE $\frac{1}{4}$ NE $\frac{1}{4}$
167	35N 36W N $\frac{1}{2}$ NW $\frac{1}{4}$

The following tracts were deleted from Sale No. 48 during final tract selection due to possible geologic hazards:

Proposed Sale No. 68 Tract No.	Coordinates of Area Previously Deleted
9	54N 82W
12	53N 86W
33	50N 84W
36	50N 78W
60	53N 71W
174	32N 35W
175	32N 34W
180	31N 38W
181	31N 37W
182	31N 34W
183	31N 33W

The following tracts in the vessel precautionary area were deleted in part or totally from Sale No. 48 during final tract selection:

Proposed Sale No. 68 Tract No.	Coordinates of Area Previously Deleted
165	35N 38W
167 (remainder)	35N 36W

Due to advances in technology and new information on the Southern California area, these tracts are being reanalyzed to determine if they are appropriate for inclusion in Proposed Sale No. 68.

Prior to leasing, geophysical exploration is conducted to determine the hydrocarbon potential of an area. This involves towing an acoustical device, which generates a shock wave, and an array of recorders or receivers. The manner in which the shock waves are reflected or refracted toward the recorders is indicative of bottom geology. There were 32 such surveys conducted in the Southern California Bight in 1978, 13 in 1979, and 11 in 1980. Through the end of March 5, permits had been issued for geophysical exploration of the Southern California Bight in 1981. USGS does not expect an increase in the rate of geophysical exploration because of the limited availability of vessels and equipment.

Statistics on Pacific OCS oil and gas leasing, exploration and development off Southern California are shown in Table VIII.F-1. From 1976 through 1980, the mean rate of exploration in the Southern California Bight was 16 wells per year. The peak rate of exploration was 29 wells in 1977. The number and location of platforms required to complete exploration of the Southern California Bight are unknown. Exploratory wells are still being drilled for the purpose of delineating the boundaries of discovered deposits. The rate of exploration could rise as high as 30 wells per year, but is expected to remain somewhat lower because of limited availability of exploratory vessel time. The rate of exploration appears to vary as a function of lease sale dates, with the number of wells drilled peaking in the third year after the sale. After three years, the number of exploratory wells drilled declines as leases expire. The 5-year leasing schedule could have the effect of expanding the peaks into a 3 to 5-year plateau.

A chronological history of oil and gas development off Southern California is shown in Table VIII.F-2. At present, no development has taken place on tracts leased in Sale No. 48, as these are still entirely in the exploratory stage. Development is expected to occur on several of these tracts within the next few years.

Oil production from the Pacific OCS has declined since 1971 when it reached a peak of 31.1 million barrels annually (Macpherson and Bernstein, 1980). For the latest reported year, 1980, production was 10.2 million barrels (U.S. Department of Interior, 1981).

Most of the present offshore production in California State offshore areas comes from operations in the Santa Barbara Channel and offshore Wilmington and Huntington Beach reservoirs. Offshore production from State waters for 1979 was 42.2 million barrels of oil, continuing a decline that began in 1969 (California Division of Oil and Gas, 1979).

Further information on oil and gas leasing, exploration and development off Southern California is provided by Macpherson and Bernstein (1980).

TABLE VIII.F-1

PACIFIC OCS OIL AND GAS LEASING, EXPLORATION, AND DEVELOPMENT STATISTICS
(Southern California)

Sale	Lease Nos.	Nominated	Offered	Bid	Sold	Terminated	Current	Wells Drilled		Existing	Proposed
								Expl.	Develop.	Platforms	Platforms
1966	(166)	1	1	1	1	0	1	6	94	2	0
1968	(167-241)	150	110	75	71	37	34	134	239	10	2
No. 35	(242-311)	1,350	231	70	56	49	7	40	8	2	2
No. 48	(315-369)	970	148	55	54	0	54	5	0	0	0
Total		2,471	490	201	182	86	96	185	341	14	4

Nominated = Tracts nominated.	Expl. = Number of exploratory wells drilled.
Offered = Tracts offered for sale.	Develop. = Number of development wells drilled.
Bid = Tracts bid.	Existing Platforms = Number of drilling platforms, production platforms, and treating facility (OS&T is included).
Sold = Bids accepted by BLM, USGS.	Proposed Platforms = Number of proposed platforms.
Terminated = Terminated leases.	
Current = Leases within the 5-year term, and those held by production, unitization agreements, or Suspension of Operations.	

SUMMARY (with respect to tracts)

Number of tracts nominated = 2,471
 Number of tracts offered for sale = 489 (20 percent of those nominated)
 Number of tracts sold = 182 (7 percent of those nominated)
 Number of leases with drilling activities = 70 (3 percent of those nominated)
 Number of leases with producing platforms = 6 (.2 percent of those nominated;
 3 percent of those sold)

Compiled by USGS, March 15, 1981

Numbers of existing and proposed platforms updated by BLM, October 5, 1981.

TABLE VIII.F-2

HISTORY OF OIL AND GAS DEVELOPMENT
OFF SOUTHERN CALIFORNIA

Year	Event
1896	First offshore oil production in the United States off Santa Barbara County
1927	Tideland discovery at Rincon
1929	Tideland discovery at Elwood
1930	Tideland discovery at Huntington Beach
1939	Tideland discovery at Long Beach
1947	Tideland discovery at Belmont
1953	Tideland discovery at West Montalvo Field
1954	Monterey artificial island
1955	Rincon artificial island
1958	Platform Hazel
1960	Platforms Helen and Hilda
1961	Platform Harry (removed)
1961	Sea floor completion wells - Rincon Island and Coal Oil Point
1962	Sea floor completion wells - Alegria and Gaviota
1963	Platforms Emmy and Herman
1964	Platform Eva
1965	Platform Hope and artificial island Esther
1966	Platforms Heidi and Holly
1967	Four artificial islands: Grissom, White, Chaffee, and Freeman
1968	Platforms: A, B, Hogan and Houchin
1969	Platform Hillhouse
1974-81	Platforms: C, Ellen, Elly, Gilda, Gina, Grace, Henry, and Hondo. Structure: OS&T
1981	Proposed platforms: Edith, Eureka, Habitat, and Gail.

References: Macpherson and Bernstein (1980); Resources Agency of California (1971);
USGS (personal communication).

Note: All entries prior to 1968 are in State waters. All entries from 1968 to present are in Federal waters.

G. POCS Technical Papers

POCS Technical Paper No. 81-1

Yamasaki, R. M. 1981. POCS Technical Paper No. 81-1 Proposed Oil and Gas Transportation Scenario of Proposed OCS Sale No. 68 Offshore Southern California. Bureau of Land Management, Pacific OCS Office, Los Angeles, CA, 13 p.

POCS Technical Paper No. 81-2

Cooke, T. S. 1981. POCS Technical Paper No. 81-2 Oil Spill Risk Analysis of Proposed OCS Sale No. 68 Offshore Southern California. Bureau of Land Management, Pacific OCS Office, Los Angeles, CA, 48 p.

POCS Technical Paper No. 81-3

Dowling, J. 1981. POCS Technical Paper No. 81-3 Economic Impacts of Proposed OCS Sale No. 68 Offshore Southern California. Bureau of Land Management, Pacific OCS Office, Los Angeles, CA, 38 p.

POCS Technical Paper No. 81-4

Blayney-Dyett. 1981. POCS Technical Paper No. 81-4 The Impacts of Proposed OCS Lease Sale No. 68 on Public Services in Santa Barbara and Ventura Counties. Prepared for the Bureau of Land Management, Pacific OCS Office, Los Angeles, CA (Contract No. BLM-YN010-CT1-1), 111 p.

POCS Technical Paper No. 81-5

The Granville Corporation. 1981. POCS Technical Paper No. 81-5 Inventory and Evaluation of California Coastal Recreation and Aesthetic Resources. Prepared for the Bureau of Land Management, Pacific OCS Office, Los Angeles, CA (Contract No. AA-851-CTO-63), 658 p.

POCS Technical Paper No. 81-6

Hill, M. L. 1981. POCS Technical Paper No. 81-6 Results of BLM-Funded Studies (1975-1978): Marine Mammals of the Southern California Bight. Bureau of Land Management, Pacific OCS Office, Los Angeles, CA, 95 p.

POCS Technical Paper No. 81-7

Environmental Resources Group. 1981. POCS Technical Paper No. 81-7 Air Quality Impact of Proposed OCS Sale No. 68 Offshore Southern California. Prepared for the Bureau of Land Management, Pacific OCS Office, Los Angeles, CA (Contract No. AA-851-CTO-64), 636 p.

POCS Technical Paper No. 81-8 (In Preparation)

Balcom, B. _____. POCS Technical Paper No. 81-8 Results of the 1975-78 Baseline Studies and Analysis Program: Subtidal Benthic Environments of the Southern California Bight. Bureau of Land Management, Pacific OCS Office, Los Angeles, CA, _____ p.

POCS Technical Paper No. 81-9

University of California, Santa Cruz. 1981. POCS Technical Paper No. 81-9 Summary Report 1975-78 Marine Mammals and Seabirds Surveys of the Southern California Bight Area Executive Summary. Prepared for the Bureau of Land Management, Pacific OCS Office, Los Angeles, CA (Contract No. AA530-CT7-36), 40 p.

H. Inventory of Oil Spill Cleanup Equipment and Materials

1. CLEAN SEAS

Inventory of Equipment and Materials

as of September 1981

I .. Containment

a) 2000' Bottom Tension Boom

This is a heavy duty, open ocean containment boom with 4'x 13' floats and 8' curtains, extending 3½' above the water line and 4½' below the water line. It is usually stored on land and deployed from the beach, requiring 24 - 36 hours for assembling.

Capability: Will contain oil in 6 - 8 foot significant waves and winds to 25 knots at currents up to 1½ knots.

b) 1600' Vikoma Seapack and Seaboom

2 Units.

For very fast response to oil spill. The Vikoma Seapack is based on a 23 foot hull and contains 1600' of Seaboom connected at one end to a diesel driven fan and ducted propeller water pump. The Vikoma Seapack unit can be transported by road trailer, towed by a small vessel or carried on a work boat or tanker. It could also be transported by aircraft.

Capability: Experience over the past several years indicates this boom can be on a scene and deployed in less than an hour. It is effective in preventing spread of oil in significant waves up to 6 feet and winds of 20 to 25 knots. In the mode in which this boom is used, there is little or no current across boom which could cause loss of oil due to underflow. CSI exercises with this boom would parallel this in response and deployment time. Response is the most important factor. Deployment is instantaneously accomplished on arrival at the site; 10 - 12 minutes.

c) Oil Containment Boom

- .. 2000 feet medium duty boom (16"x 12" skirt Kepner Sea Curtain) for harbor protection.
- .. 2000 feet light duty (8"x12" skirt Kepner Sea Curtain) for secondary harbor protection.
- .. 2695 feet Goodyear Sea Sentry harbor protection and offshore containment boom. (12" x 24').
- .. 5527 feet Expandi light duty oil boom, Model 3000. This boom may be used for offshore rapid deployment for containment as well as harbor protection.
- .. 9100 feet Expandi medium duty oil boom, Model 4300. This boom would primarily be used for offshore rapid deployment and containment.
- .. 2500' Supermax 36' boom - 50 sections of 28oz. fabric w/3/4" cable.
- .. 5500' Minimax boom - 55 sections of 22oz. fabric w/5/8" chain.

d) Tide-Mar VII Barge:

One (1) 641 ton tank barge, Tide-Mar VII, for collecting oil picked up by skimmers as they work in an oil spill. This is a 160' x 39' x 13' ocean going barge with 10 tanks, capacity of 7840 barrels, and six (6) diesel engine driven pumps. Presently moored in Santa Barbara Harbor.

e) Floating Storage Bags:

Two (2) 5000 gallon Kepner Floating Storage Bags
Six (6) 1200 gallon Kepner Floating Storage Bags
One (1) 6000 gallon Dracone Floating Barge

These bags to be used as interim storage awaiting arrival of the Tide-Mar VII or similar tank barge/vessels.

II .. Recovery

a) Cyclonet-100:

One (1) Cyclonet-100 skimmer. This skimmer is an open sea skimmer and may be fitted to most types of vessels. This skimmer contains a diesel engine, hydraulic unit and pumping system.

b) Cyclonet-050:

One (1) Cyclonet-050 skimmer fitted to a Zodiac Mark-V inflatable dinghy. This skimmer is primarily for protected and semi-protected waters, but may be used in the open ocean in light sea conditions. This skimmer is self-propelled, contains a pump system and small oil storage.

c) Acme 39T Weir Skimmer:

One (1) Acme 39T Weir skimmer, gasoline driven pump. This pump is designed to collect oil in somewhat heavy concentration. Ideal for harbor areas. Will recover oil in open ocean in light seas. Fluid recovery rates up to 340 GPM. Light in weight and can be handled by two men.

d) Acme 51T Weir Skimmers:

Five (5) - Acme 51T Weir skimmers, gasoline driven pumps. These pumps are designed to collect oil in somewhat heavy concentration. Ideal for harbor areas. Will recover oil in open ocean in light seas. Fluid recovery rates up to 340 GPM. Light weight and can be handled by two men.

e) Oil Mop MK-II-9:

Two (2) Oil Mop MK-II-9 systems each consisting of a two-wheel trailer, oil mop machine, tail pulleys and 400' of 9" mop.

Capability: This system is primarily used in protected waters, will recover all grades of oil. Maximum capacity 100 bbls/hr.

f) CS Skimmer System:

One (1) CSI Skimmer System, consisting of 45' x 17' x 6' catamaran-type adjustable weir skimmer barge, two 240' lengths of 30" Kepner Sea Curtain boom, a 2000 GPM pumping system and two 100 barrel oil-water separation tanks or 5000 floating storage bag. For fast response, the skimmer with boom, floating storage bag, pumps, etc. on board is anchored in Santa Barbara harbor.

Capability: This system is capable of recovering all grades of oil from light to bunker C at rates up to 2000 GPM plus some debris and sorbent material in moderate sea states. Modification to this skimmer eliminates the necessity of the tanks by installing a pump onboard and a 5000 gallon floating storage bag. Also, may be pumped directly into the TM-VII barge.

g) Mark-II Skimmer:

Two (2) Mark-II Skimmers, 14' x 30' weir-type are available in Carpinteria Yard. These may be used, one on each side of a vessel, singularly with a vessel, or may be used independently with O/B motors in a harbor situation. Recovery system can be either an 80 barrel, skid-mounted vacuum tank or compressed air-driven Wilden pumps and 100 bbl. oil-water separation tanks, or a self-contained pump and floating 1200 gallon storage bag, all of which are available.

Capability: These are very simple skimmers and may be used in a number of ways to solve the particular problem at hand. All grades of oil from light to bunker C can be recovered plus small amounts of debris. Fluid recovery rates from 50 GPM to 200 GPM are available. These skimmers are limited to light winds and light sea states. Trailers capable of carrying these skimmers on the highway have been constructed.

h) Komara Miniskimmer:

One (1) Floating Disc Skimmer, hydraulically driven disc and pump. This pump is designed to collect oil in concentrated areas; ideal for containment booms. Will recover oil in open ocean in light seas conditions.

Capability: Fluid recovery rate 15 to 76 bbl/hr. Light-weight, can be handled by manpower.

i) Floating Weir Skimmers:

Three (3) Floating Weir Skimmers, compressed air driven Acme-type pump. These were designed to collect oil concentrated in the B-T boom area and work in harbor areas and quiet waters.

Capability: These skimmers will handle light to fairly heavy oil no debris in 2 - 3 foot waves. Fluid recovery rates are up to 300 GPM for each skimmer.

III .. Vehicles/Trailers:

- a) Truck
One (1) 2½ ton. Used to tow Vikoma Seapack, Boats, haul boom, absorbents, etc.
- b) 40' Enclosed Trailer Vans
Eight (8) trailers stocked with booms, absorbents, small skimmers, miscellaneous cleanup equipment. Are stored in strategic locations in our area of interest.
- c) 25' Mobile Communications Center
Has mobile base station, portable radios, auxiliary electrical power and all other equipment for self containment.
- d) 36' Flatbed Trailer
One (1) 36' Flatbed trailer for use with the 100 bbl. vacuum tank.
- e) LTD Ford Automobile
Manager's company car.
- f) Tank Wagon Trailers
Two (2) 100 bbl. tank wagon trailers loaded with dispersant.

IV .. Boats/Vessels:

- a) Oil Spill Response Vessel (OSRV) ("Mr. Clean")
One (1) vessel 136' x 36'. Powered by two (2) V-12 diesel engines providing 1600 HP, capable of a speed of 12kts. Fuel capacity of 99,500 gals. Two (2) 60 kw generators for electrical power. 100' x 34' clear deck space.

Major items onboard include, Cyclonet-100, Cyclonet-050, Acme skimmer, 2000' of 43" Expandi boom on a 10' powered reel, 2500' of heavy duty Goodyear boom, Vikoma Seapack, with 1600' of inflatable boom, 12 ton crane, oil/water separation tank (4000 bbl). In addition, a 16' skiff, a 32' boom boat, and storage of absorbents and dispersants with necessary applicators.

- b) One (1) 19' Larson skiff with 75 HP Johnson motor, kept in Santa Barbara harbor or Clean Seas' yard, for use as work boat around skimmers and barge.

Four (4) 14' aluminum skiffs w/OB - one in Van in Carpinteria, one in Van in Ventura, and one in Van in Avila Beach.

One (1) 21' Monark Utility baot with O/B for use as a work boat - stored in Clean Seas' yard in Carpinteria.

One (1) 10' Avon Rubber Raft with O/B - stored in Clean Seas' yard in Carpinteria.

V .. Absorbents/Chemicals/Dispersants

- a) A large inventory of absorbents including Conwed: sweeps, blankets, booms and rugs; 3M Company: sweeps, sheets, booms and Dow Imbiber bags and blankets.

Stored in the Carpinteria warehouse are smaller quantities of Oil Herder, 101 boxes of booms (3376'), 138 boxes of sweeps (100 per box), 9 rolls of blankets (300' each), 7 rolls of rugs (300' each), 18 boxes of sweeps (100' each). The above are from Conwed and 3M Company.

199 Dow Imbiber Blankets

11 boxes of Oil Snare

Additional quantities are available as "back-up" from warehouses in the Los Angeles area.

- b) Corexit #9527
225 Drums
- c) Helicopter Chemical Dispersant Spray Units
Two (2) Simplex Model 2000, with 150 gallon buckets and 32' boom
- d) Surface Chemical Dispersant Spray Unit
One (1) Surface Chemical Dispersant Spray Unit with pump, booms and mountings for different types of vessels.
- e) DC-4 Aircraft
With crew, dispersant spraying equipment, radio, portable dispersant loading equipment, 3000 gal.per/load.

VI .. Radio Communications System

- a) A complete radio system consisting of UHF on 454.459.00 MHz and VHF on 158.445/159.480 MHz. This provides solid communication throughout the Clean Seas area of interest. This system consists of:

- 1 each VHF/UHF base station in Santa Barbara office
- 1 each VHF/UHF base station in Carpinteria warehouse
- 1 repeater on Santa Ynez Peak (158.445 MHz)
- 1 each VHF.UHF mobile unit in car and mobile van
- 20 portable Handie-Talkie units (UHF)
- 12 portable Handie-Talkie units (VHF)
- 1 transportable repeater 454.00 MHz

VII .. Miscellaneous

- a) Air Driven Pumps:
Two (2) M15 Wilden double diaphragm pumps used with MK-II Skimmers and miscellaneous equipment.
- b) Six (6) Scare-Away Exploders:
Bird frightening devices. Operates automatically on LP gas.
- c) One (1) Wiggins Model WD-44 Forklift
4000#
- d) One (1) Vikoma Seaboom Vulcanizer Machine
For repair of boom
- e) One (1) Power Block
For Vikoma Boom recovery
- f) 100 bbl. Skid-Mounted Vacuum Tank with Trailer
One (1) 100 bbl. Vacuum Tank used with MK-II Skimmers or may be used independently.
- g) 100 bbl. Oil/Water Recovery tanks
Two (2) Oil/Water Recovery Tanks, Coast Guard approved. Used with the CS Skimmer or other skimmer systems.
- h) 100 bbl. Flat Storage Tanks
Four (4) 100 bbl. Flat Storage Tanks. Used with all skimmer systems.
- i) Bridger Shoulder Line Gun
One (1) Line Gun with rewinding machine, Model N, with accessories - for use with Vans in boom launching operations.
- j) Compressor
One (1) Gardner-Denver 600 CFM rotary, diesel engine driven, wheel mounted compressor stored in Carpinteria yard. Usually used with air tools and to drive the Exxon Floating Weir Skimmers, Acme Skimmers of the Wilden pumps.
- k) Lines, Hoses, Tools
Complete set of all necessary sizes of nylon and poly lines for deploying and towing booms and skimmers. All hoses are fitted with Camlock fittings. Air hoses for compressors and complete sets of tools for all equipment.
- 1) DC-4 Aircraft/Globe Air, Inc.
This aircraft is under contract to Clean Seas, SC-PCO and Clean Caribbean. The aircraft is on continuous standby in Mesa, Arizona at Falcon Field. The agreement is for: the aircraft (DC-4), crew, dispersant spraying equipment, all necessary overwater survival equipment, all necessary radio equipment, etc.

VII .. Miscellaneous (con't)

- m) Skim-Pak Head and Control System. 4200 SH Double Port 4000 gph
4000 CS Control Wand, 4000 E Extender.
- n) 2 - 43" 900# Magnets - adators for the Expandi Boom.

VIII .. Equipment/Material on order

- 1) 1 - 32' Aluminum Boom Boat - high speed vessel
Delivery 30 September 1981)

2. SOUTHERN CALIFORNIA-PETROLEUM CONTINGENCY ORGANIZATION

C. J. Campbell
(213) 833-4426 (24 hr)
(213) 519-8523 (home)

SKIMMERS

LOCATION

1 set - 150 Cyclonet

Very large and effective total recovery sytem. Fast deployment and rapid recovery speed, 2-4 knots. Fitted to large service vessel of 35-45' beam and 200 in length.

Stored at Crowley Terminal Berth 213 Terminal Island, California Manufacturers recovery rate: 3,114 bbls/hour (ideal max. conditions.)

1 set - 050 Cyclonet

Small, effective recovery unit. Centrifuge system, mounted on 24' Zodiac Boat.

Fort MacArthur
320 Lower Fort MacArthur
San Pedro, California

2 - Mark II Skimmers
on trailers

Simple 14' x 30' weir type towed or tied along side vessel of opportunity. Recovers light oil to Bunker C with rates of 50-200 gpm in relatively calm seas.

Fort MacArthur
320 Lower Fort MacArthur
San Pedro, California

2 - Acme Skimmers

Excellent harbor or open sea skimemers once oil contained in boom.

Fort MacArthur
320 Lower Fort MacArthur
San Pedro, California

INVENTORY OF EQUIPMENT

SOUTHERN CALIFORNIA-PETROLEUM CONTINGENCY ORGANIZATION

SKIMMERS (Contd)

LOCATION

2 - Komara Mini-Skimmer

Excellent skimmer. Harbor or open sea. Often used with Vikoma Sea Boom.

1 - Fort Mac Arthur
1 - Two Harbors, Isthmus, Catalina Island

3 - Seavac Oil
Recovery Systems

Excellent recovery system in open ocean or harbor. Consists of slurp skimmer oil water separator, pump, floats, hoses, etc. Relatively calm seas.

2 - Fort MacArthur
1 - Two Harbors, Isthmus, Catalina Island

M/V RECOVERER

Has 10,000 bbls recovered oil storage capacity.

Crowley Environmental Svc.
Berth 213
Terminal Island

BOOM DEPLOYMENT & WORK BOATS

2 - 35' Raider Boats

Fast response. excellent work vessel. Bow ramp - large load capacity (Each - 2-200 hp motors)

Fort MacArthur
(on trailers)

1 - 12' Aluminum Work Boat

Work boat with 15 hp motor.

(1 Raider equipped with 1000' 14" Whittaker Expandi Boom)

Fort MacArthur

1 - 17' Glaspar Boat

fast response 130 hp Volvo engine

Fort Mac Arthur

INVENTORY OF EQUIPMENT

SOUTHERN CALIFORNIA-PETROLEUM CONTINGENCY ORGANIZATION

LOCATION

OIL CONTAINMENT BOOM:

5 - Vikoma Seapacks
(2 on trailers),
(1600'/Unit = 8000')

23' hull contains 1600 ft.
of sea boom very fast
response, excellent reports
performance North Sea,
English Channel. In
significant waves up to 6'
and winds of 20-25 knots.
Reports substantiated
by Clean Seas.

3100 Ft. Goodyear Boom
(12 " x 24")

Excellent harbor protection.
Boom material can withstand
chafing against riprap,
pilings, etc. Also excel-
lent open ocean boom.

4100 Ft. Kepner Compacti
Boom. 16" freeboard,
23" draft.

Excellent open ocean boom.
Excellent harbor boom.

200 Ft. Conwed Sorbent Boom

4 - Fort MacArthur
(One on trailer);
1 - Two Harbors,
Isthmus, Catalina Isl.
(On trailer)

Fort MacArthur
Inflated for quick
deployment

Fort MacArthur
(4100 Ft. in 40' van)

Two Harbors, Isthmus
Catalina Island

INVENTORY OF EQUIPMENT

SOUTHERN CALIFORNIA-PETROLEUM CONTINGENCY ORGANIZATION

OIL CONTAINMENT BOOM (Contd)

LOCATION:

1000 Ft. Expandi Boom
(11" x 18")

Excellent open ocean or
harbor boom.

Two Harbors, Isthmus,
Catalina (airlift)

OIL CONTAINMENT BAGS

3 - Dunlap Dracones

Heavy duty sea bag used
with any skimmer. Holds
1200 Imp. gals. Equipped
with towing hose assemblies
and fittings.

2 - Fort MacArthur
1 - Two Harbors, Isthmus,
Catalina Island

3 - Kepner Sea Bags

1200 gallons oil container.
These bags to be used with
recovery systems until
barge or other containment
vessel is on-site.

1 - Fort Mac Arthur
1 - Two Harbors Isthmus,
Catalina Island
1 - Crowley, Berth 213

DISPERSANT EQUIPMENT

1 - DC-4 Aircraft fully
equipped for spraying
Dispersant is under con-
tract to SC-PCO.

Mesa, Arizona
4 hr. response to Calif.

3000 gal. capacity, boom,
pumping, handling equipment,
aboard.

2 - English Type

Vessel spray booms, pumps,
breaker boards, etc.

1 - Fort MacArthur
1 - Crowley, Berth 213
Terminal Island

100- drums Corexit 9527
(1 bbl Conco K)

79 - Fort MacArthur
1 - Two Harbors, Isthmus Cat. Is.
20 - Signal Hill

Vessel spray booms, pump
etc.

Fort Mac Arthur

2 - Bow Type

1 - Fort Mac Arthur
1 - King Harbor

INVENTORY OF EQUIPMENT

SOUTHERN CALIFORNIA-PETROLEUM CONTINGENCY ORGANIZATION

DISPERSANT EQUIPMENT (Cont'd)

LOCATION:

1 - 300 gallon -
Heli. spray unit.

Portable, fitted to any
helicopter.

Fort Mac Arthur

MISCELLANEOUS EQUIPMENT

2 - Double Diaphragm
Pumps

Fort Mac Arthur

Excellent high volume
rugged pumps. Used
with Mark II Skimmers.

1 - 100 PSIG Joy Air
Compressor

Fort Mac Arthur

To be used with double
diaphragm pumps

1 - hp Twin Cylinder
Tank Air Compressor

Fort Mac Arthur

2 - Power pack units
and Power source

Fort Mac Arthur

Used for recovery of
Vikoma Boom

2 - Zon Guns

Fort Mac Arthur

Used for frightening
birds.

1 - Av-Alarm

Fort Mac Arthur

Used for frightening
birds.

8 - Drogues

Fort Mac Arthur

Used for tracking oil
slicks.

2 - Electronic Tracker
buoys

SC-PCO Office

Used for tracking oil slicks

INVENTORY OF EQUIPMENT

SOUTHERN CALIFORNIA - PETROLEUM CONTINGENCY ORGANIZATION

RADIO EQUIPMENT

- 2 Frequencies: 1 UHF and 1 VHF
- 2 Portabel Repeaters and other necessary gear
- 28 Portabel Radios stored at SC-PCO Office
- 1 Repeater: Santa Catalina Island
- 2 Mobile units: In General Managers Car - 1 UHF and 1 VHF
- 1 Mobile unit: Aqua Contractors truck 1 UHF

STORAGE FACILITIES

1. One - 40' x 20' prefab building, Cat Harbor, Catalina Island. Storage and field headquarters. Also contains large quantity of absorbent pads and booms.
2. Field office and tool room at: 320 Lower Fort MacArthur. This field office contains miscellaneous maintenance tools, work bench, lunch room, and other gear. California Department of Fish and Game bird cleaning equipment stored here.
3. Two - 40' vans. One stores 3100' Kepner Boom - One stores miscellaneous oil spill equipment.
4. One - 26' enclosed trailer at Fort Mac Arthur. Beach cleanup gear including beach matting, shovels, pitch forks, absorbents, etc.
5. One - 24' enclosed trailer - stores miscellaneous cleanup gear.

3. CLEAN COASTAL WATERS

C. J. Campbell

(213) 833-5219 - 24 hr.

(213) 833-4426 - 24 hr.

SKIMMERS

40' Self Propelled
MARCO Class II Skimmer
Excellent Harbor Skimmer
(Requires USCG clearance for
open ocean use)

Oil Mop
1000' of Rope Mop
Excellent Recovery Unit

1 - Seavac System
Slurp Skimmer w/2" Homelite
Diaphragm Pump - 2-1200 gal.
Storage Bags.

LOCATION

Pacific Towboat & Salvage
Pier D, Berth 35
Long Beach

Crowley Terminal
Berth 213
Terminal Island

Crowley Terminal
Berth 213
Terminal Island

WORK BOAT

45' Rotork (Clean Waters II)
2 - 200 Volvo 1/0 Engins
Excellent rapid response vessel.
Fully equipped with Oil Mop, etc.

Crowley Terminal
Berth 213
Terminal Island

BOOMS

3000' 20" Kepner, stowed on
dock for immediate
deployment.

Crowley Terminal
Berth 213
Terminal Island

2000' 20" Kepner, stowed on
dock for immediate
deployment.

Pactow
Pier D, Berth 35
Long Beach

5000' 14" Kepner, stowed on
dock for immediate
deployment.

Shell Oil Terminal
Berth 169
Los Angeles

5000' 14" Whittaker Expandi Boom
2 Trailers, Pintle Hitches,
towable by 3/4 ton pickup

Chevron Refinery
El Segundo

9000' 14" Whittaker Expandi Boom
3 Trailers, 2-1/2" ball
hitch, towable by 3/4 ton
pickup.

Aminoil-Huntington
Beach Facility

CLEAN COASTAL WATERS - SAN DIEGO

EQUIPMENT

Equipment Location:

Atlantic Richfield Company
2995 East Harbor Drive
San Diego, CA

Don Young days (714) 233-8979 home # (714) 267-4541

Type of equipment:

1 - 15' Acme boat 140 hp Evinrude motor
suspended by sling over water

1 - 14' Acme skim boat - 40 hp Evinrude motor (on trailer)

400' - 6" Acme OK Correll Boom (on boat)

200' - 6" Acme OK Correll Boom - stored on dock

300' - 3½" discharge hose

Oil Mop Skimmer

Floating Saucers

Miscellaneous small items, shovel, gloves, etc.

INVENTORY OF EQUIPMENT

CLEAN COASTAL WATERS

RADIOS

LOCATION

Radio System Consisting of:

302 W. 5th Street,
Suite 302
San Pedro, CA

2 Portable Base Stations
8 Hand Sets - same frequency
as SC-PCO

PROCEDURE TO OBTAIN EQUIPMENT

Before CCW equipment is operated, a verbal release must be obtained from the General Manager or a member of the CCW Executive Committee as follows:

	<u>Office Phone</u>	<u>Home Phone</u>
Roy C. McClymonds, Gen Mgr.	(213) 833-5219	(714) 537-6974
Charles D. Barker, Alter. Mgr.		(213) 832-2760
Carl Levi, Chairman	(213) 432-6923	(714) 828-3566
Frank Fralinger, Vice. Chair.	(213) 835-5611	(213) 427-1700
Gene Evers, Secy/Treas.	(213) 615-5100	(213) 377-2703

After obtaining equipment release from the General Manager or Executive Committee member, call the company which will operate the equipment (other than radios) and give them your instructions. Following is a list of phone numbers for this purpose:

Crowley Environmental Services	24 hr. (213) 549-9227
Guy Bubica	(home) (213) 833-1490
Gunner Salem	(home) (714) 892-4830

Pacific Towboat & Salvage 24 hr. (213) 435-0171
If no answer, call one of the following:

Ray Tsuneyoski	(home) (714) 846-6536
Leo Stephenson	(home) (213) 429-0063
Don Ducsai	(home) (213) 429-1996
Bob Tevis	(home) (213) 425-8480
Tom Opatz	(home) (714) 631-4419

Crowby & Overton 24 hr. (213) 432-5445

Universal Marine (213) 435-8551

INVENTORY OF EQUIPMENT

CLEAN COASTAL WATERS

The Executive Committee member who released the equipment will also call the equipment operator and confirm the release.

The CCW radio equipment is readily available at the CCW office during regular business hours. Outside regular business hours call the Manager, Roy C. McClymonds at (714) 537-6974 - home or (213) 833-5219 - 24 hr. phone. He has keys to the building and CCW office space. Carl Levi (213) 432-6923 office or (714) 828-3566 home, and the CCW Secretary, Gerri Pym (213) 429-2755 home, also have keys to gain access to the CCW office space after hours; also Mr. Guy Bubica of Crowley Environmental Services Inc. (213) 549-9227 24 hr., and Aqua Contractors (213) 379-8852 24 hr.

WHO MAY OPERATE EQUIPMENT:

The equipment kept at the PACTOW facility, LB Berth 35, will be operated only by PACTOW or their Designee.

The 14" boom stored at the Shell Oil Marine Terminal, LA Berth 169, will be operated by any competent contractor chosen by the spiller, e.g., Crowley Environmental Services Inc., Pacific Towboat & Salvage, Crowley & Overton, or Universal Marine.

Permission to enter the facility where the 14" boom is stored should be obtained from the facility owner's representative:

Shell Marine Terminal	Office	(213) 834-2638
Frank Fralinger	"	(213) 835-5611
	home	(213) 427-1700
Chevron El Segundo Refinery	Office	(213) 615-5100
Gene Evers		(213) 377-2703
Aminoil Huntington Beach Facility		
Bob Gaul	Office	(213) 592-5501
	home	(714) 536-1346

The radio equipment will be operated by anyone designated by the spiller who is familiar with basic radio telephone procedure, particularly use of call signs as required by the FCC.

TERMS AND CONDITIONS

CCW equipment is released to a spiller on condition that the spiller pay all costs for operating the equipment and be responsible for promptly returning the equipment when no longer needed in good order, clean and properly stowed to the satisfaction of the CCW Committee.

4. PRIVATELY OWNED EQUIPMENT
AVAILABLE THROUGH CCW
(in San Pedro-Long Beach Area)

CONTAINMENT BOOMS - Available Through: Clean Coastal Waters (213) 833-5219
302 W. 5th Street, Ste 302
San Pedro, CA 90731

<u>Company/Location</u>	<u>Amount of Boom (feet)</u>	<u>Size (inch)</u>
Aminoil, Huntington Beach Western Region - (213) 592-5501	300	
Arco, Chris Whorton, Manager Long Beach District (213) 436-9071	1000	6
Chevron U.S.A., El Segundo, Gene Evers (213) 615-5000	14,640	various
Chevron, Inglewood, Mr. D. Dayunker (213) 295-6361	100' 200'	6" 8" sorbant
Chevron, San Pedro, C. T. Menechios (213) 832-6774	2400	
City of Long Beach, R. T. Blair (213) 590-6084	100	8
City of Long Beach, THUMS, W. F. Ellison (213) 436-9211	1000 5400	24" 6"
Crowby & Overton - Jim McEchran, (213) 432-5446	10,000	6 & 8
Crowley Environmental - Guy Bubica (213) 549-9227 24 hr	3000 2500	8 Petro-Barrier
Douglas Terminal - Terminal Supt. P. J. Vaiana (213) 834-2004	1000	6,
Gulf Refinery - Shift Supervisor, S/F Springs (213) 921-3581 24 hr	225	4
Gulf Terminal - Berth 215 Shift Supr. (213) 921-3581 24 hr	1000	8
Mobil Marine Terminal - Pipeline Dispatcher (213) 832-8311 24 hr	2000	
Shell Long Beach Pipeline -Pipeline Dispatch (213) 482-8191	300	

PRIVATELY OWNED EQUIPMENT
AVAILABLE THROUGH CCW
-(in San Pedro-Long Beach Area)

<u>Company/Location</u>	<u>Amount of Boom (feet)</u>	<u>Size (inch)</u>
Union Oil - Bulk Operation Shift Foreman (213) 834-2610 days (213) 834-2610 off hrs.	2,000	-

PRIVATELY OWNED EQUIPMENT
AVAILABLE THROUGH CCW-SD
(in San Diego Area)

NOTE: This equipment can be released in an emergency - if no prior commitment.

San Diego Gas & Electric
4600 Carlsbad Blvd
Carlsbad, CA 92008

Carl Johnston days (714) 438-2502 24 hr (714) 438- 9100

1000' - 14" Whittaker Boom

Slurp Skimmer

2 - 1200 gal containment bags

2 - 35' boats under contract to Universal Divers, San Pedro
call John Houchen (213) 519-9186

- 1 - 35' twin screw mooring launch
- 1 - 35' wooden hull vessel for deploying boom

San Diego Gas & Electric
South Bay Power Plant
990 Bay Blvd
Chula Vista, CA 92011

Jim Ludolph (714) 420-9770

National City:

- 2 300' sections Kepner Sea Curtain
- 1 500' petro berrier

Chula Vista

- 1 - 14' Boston Whaler
- hand light lantern
- photographic equipment
- pitch forks
- shovels
- rubber gloves & boots
- vehicles (trucks, etc.)

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5. ADDITIONAL SOURCES AND LISTS OF EQUIPMENT

United States Coast Guard
Pacific Team, National Strike Force
Hangar No. 2
Hamilton Air Force Base, California 94934

Although located in San Francisco, the Strike Force will have four men and their equipment on the way within 2 hours of notification. The remainder of their team will be on the way within 12 hours (total team is 18 persons).

Key Offshore Equipment

- 3 ADAPS submersible pumps
- 7 containers of ADC - High Sea Barrier boom
(Each container has 612 feet of 48" boom)
- 500 feet of 36 inch Coastal Barrier boom
- 1 - 051-125 Advancing Weir Skimmer
- 1 Lockheed Open Water Oil Recovery System
- 1 Marco Class I skimmer
- 1 Acme skimmer
- 1 Slurp skimmer
- 1 Mobile command post and communications equipment.

Department of the Navy
Naval Construction Battalion Center
Port Hueneme, California 93043

Key equipment

- 1,500 feet - Type I Class II boom
- 1 Lightweight portable skimmer
- 1 LCM-6 converted and rigged for skimming
- 1 AVR with holding tanks

Chevron U.S.A. Inc.
El Segundo Refinery
324 West El Segundo Blvd.
El Segundo, California 90245

Key equipment

- 7 Seavac skimmer
- 4 1,200 gallon oil recovery bags
- 10,000 feet of boom
- 1 Mark II skimmer

San Diego Gas and Electric
Encina Power Plant
4,600 Carlsbad Blvd.
Carlsbad, California 92008

Key equipment
1 skimmer
1,500 feet of boom

Commanding Officer
Naval Air Station
North Island, Attention: Code 315
San Diego, California 92135

Key equipment
1 DIP-3001 skimmer
3,000 feet of Sea curtain boom

Commanding Officer
Naval Supply Center
Attention: Code 701
San Diego, California 92132

Key equipment
1 LCM-6 converted and rigged for skimming
1 DIP-1001 skimmer
3,000 feet of Kepner sea curtain boom

Commanding Officer
Naval Station
San Diego, California 92136

1 LCM-6 converted and rigged for skimming
1 DIP-3001 skimmer
1 floating skimmer
5,000 feet of type 3 boom
500 feet of type 1 boom

Kepner Plastics
3131 Lomita Blvd.
Torrance, California 90505

As a major oil spill boom manufacturer; they normally have over 10,000 feet in stock that could be used in case of emergency.

Whittaker Corporation
5159 Baltimore Drive
La Mesa, California 92041

As a major oil spill boom manufacturer, they normally have over 10,000 feet in stock that could be used in case of emergency.

Clean Bay, Inc.

Room 220,

2280 Diamond Blvd.

Concord, California 94520

An oil spill cooperative consisting of 14 member companies.

Key Offshore equipment

- 1 9,000 bbl. cargo tanker
- 17,000 feet of various sizes and types of boom
- 2 Marco Class III skimmers
- 1 Marco Class I skimmer
- 2 Floating Weir skimmers
- 5 Mark II Weir skimmers

CONTRACTORS

Petroleum West Maintenance Corporation
1834 Harbor Avenue
P.O. Box 9246
Long Beach, California 90810

(213) 432-7901
Mr. Thompson

2 - inboard powered work boats
1 - outboard powered work boat
Fiberglass work punts
Suction barges
Barges - 30' to 100'
Dockside work floats
Vacuum trucks - 36 BBL to 100 BBL
5 - pickup trucks
2 - A-frame trucks
6 - flatbed trucks (1 to 2-1/2 tons)
1 - 4-wheel drive pickup (sand tires)
1000 lb. pressure water blasting equipment
Sandblasting equipment with 250-lb. psi.
Miscellaneous hose and pumps
Dump truck (5 yd)
Water tank truck
150-lb. compressor

CONTRACTORS (Contd)

Action Engineering, Inc.
P. O. Box 505
Temple City, California 91780

(213) 447-8111
Mr. Amos Broughton

Miscellaneous equipment

Petroleum Construction, Inc.
1350 E. Santa Paula Street
Santa Paula, California 93060

(805) 525-2144
Mr. LeRoy Fox
24-hour service

Skiffs and Outboard Motors,
Miscellaneous equipment and manpower

Pacific Construction and Maintenance
Offshore Division of Petroleum Construction

(805) 647-1604
Mr. LeRoy Fox

Same equipment as Petroleum
Construction, Inc, plus:

15 - offshore men
Air compressors
Oil field repair equipment

Crowley Environmental Services
Berth 213
Terminal Island, CA 90731

(213) 549-9227
Mr. Guy Bubica
24 hr service

Vessels for deploying boom, oil spill
cleanup, salvage, diving
(SEE ATTACHED LIST)

Tidewater Marine Pacific, Inc.
104 E. Haley Street
Santa Barbara, California 93101

(805) 963-1774
Mr. Howard Hague

1 - 190' towing and supply boat
1 - 160' towing and supply boat
1 - 136' towing and supply boat

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EQUIPMENT AND MANPOWER CONTRACTORS

Marine Equipment

San Diego Area

Southern California Service Corp.
205 West 35th Street, Suite K
National City, California

(714) 427-0642

(Affiliate of Hutchison & Sons - Wilmington)

Crowley Constructors
1255 West G Street
San Diego, CA 92101

(714) 239-8752

(714) 239-6663

1 - Tug

1 - Derrick Crane barge - 130 ton
Can get equipment from Crowley Maritime
in Long Beach.

Pacific Towboat & Salvage
1839 Water Street
San Diego, California

(714) 234-8228

Tugs

U.S. Navy
San Diego, California

(714) 235-3853

Dave Fisher

- 1 - JBF Craft (Naval Station)
- 2 - Utility boats (Naval Station)
- 2 - Tank boats (Naval Station)
- 2 - Boats for rigging boom (Naval Station)
- 1 - LCM-6 boat (Point Loma)
- 2 - Boston whalers (Point Loma)
- 2 - 16 ft punts (Point Loma)
- 1 - Dip 3001 oil recovery boat (North Island)

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Bureau of Land Management
Library
Denver Service Center

BLM Library
Denver Federal Center
Bldg. 52, OC-521
P.O. Box 25047
Denver, CO 80225

